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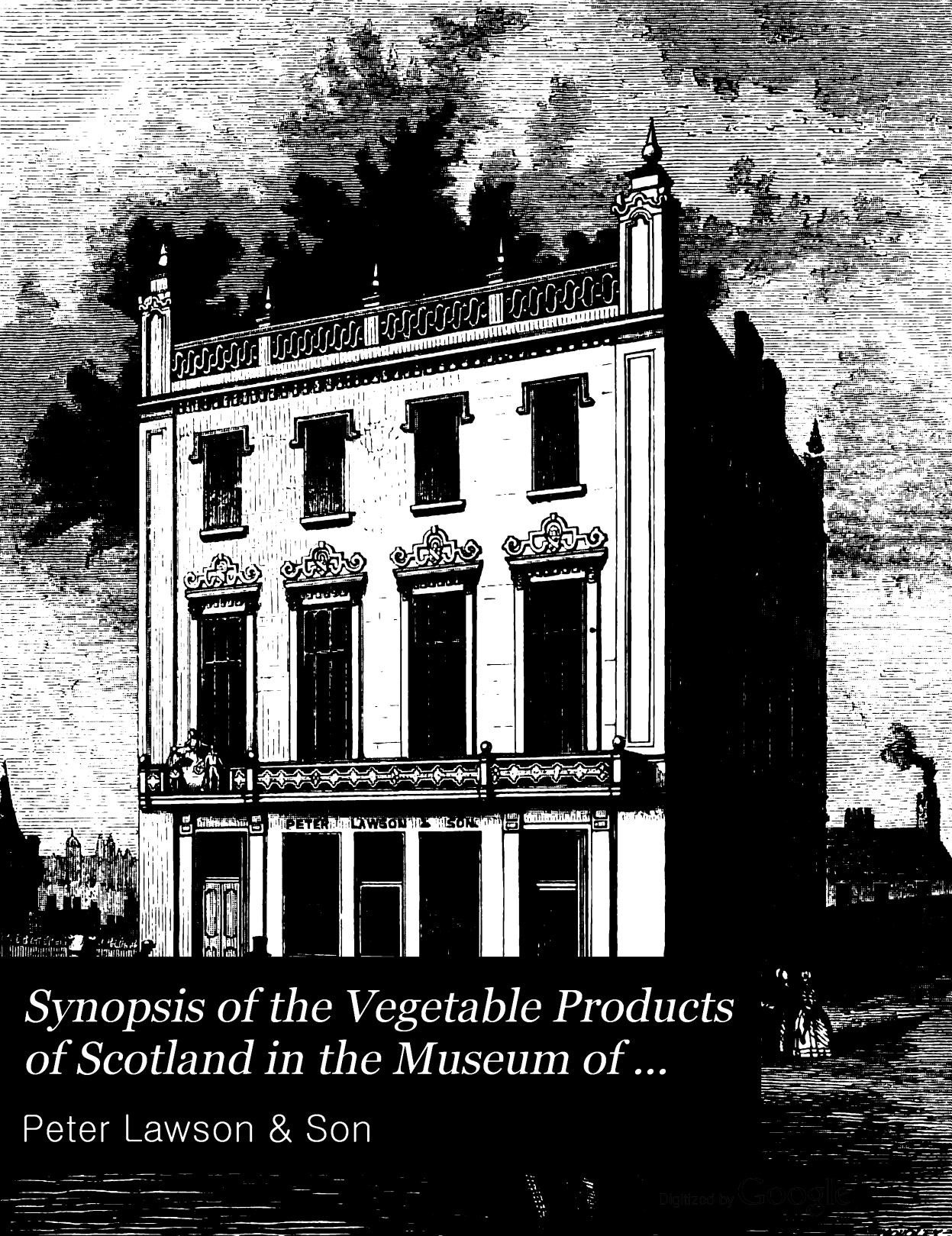

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SYNOPSIS

OF THE

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OF

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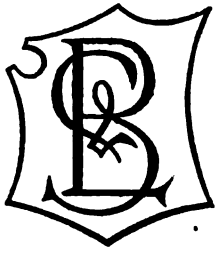

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SYNOPSIS

OF THE

VEGETABLE PRODUCTS

OF

SCOTLAND

IN THE MUSEUM OF THE

ROYAL BOTANIC GARDENS OF KEW.

BY

PETER LAWSON AND SON,

SEEDSMEN AND NURSERYMEN TO THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.

"God said, Behold, I have given you every herb bearing seed, which is upon the face of all the earth, and every tree, in the which is the fruit of a tree yielding seed."—GENESIS i. 29.

EDINBURGH:

PRIVATE PRESS OF PETER LAWSON AND SON.

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TO

SIR WILLIAM JACKSON HOOKER,

K.H., D.C.L., F.R.S., F.L.S.

VICE-PRESIDENT OF THE LINNEAN SOCIETY; HONORARY MEMBER OF THE ROYAL IRISH ACADEMY;
MEMBER OF THE IMPERIAL ACADEMY CÆSAR. LEOPOLD. NATURÆ CURIOSORUM; OF THE
IMPERIAL SOCIETY CÆSAR. NATURÆ CURIOSORUM OF MOSCOW; OF THE
ROYAL ACADEMIES OF SWEDEN, RUSSIA, LUND; OF THE
ACADEMIES OF PHILADELPHIA, NEW YORK, BOSTON;
OF THE NAT. HIST. SOCIETY OF MONTREAL,
ETC. ETC. ETC.

AND

DIRECTOR OF THE ROYAL BOTANIC GARDENS OF KEW;

IN ACKNOWLEDGMENT OF HIS IMPORTANT SERVICES IN THE ADVANCEMENT OF
ŒCONOMIC BOTANY;
IN ADMIRATION OF HIS DISTINGUISHED SCIENTIFIC ATTAINMENTS;
AND AS A MARK OF PRIVATE ESTEEM,

This Volume,

DESCRIPTIVE OF THE COLLECTION OF VEGETABLE PRODUCTS
PREPARED FOR THE GREAT EXHIBITION OF THE INDUSTRY OF ALL NATIONS,
PRESENTED TO THE ROYAL COMMISSIONERS,
AND, UNDER SUBSEQUENT ARRANGEMENTS WITH THE BRITISH GOVERNMENT,
DEPOSITED IN THE ROYAL BOTANIC GARDENS OF KEW,

Is Respectfully Inscribed,

BY HIS FAITHFUL SERVANTS,

PETER LAWSON & SON.

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PREFACE.

*THE following descriptive account of the Vegetable Products of Scotland in their relation to Agriculture, was prepared for the express purpose of furnishing the visitors to the Great Industrial Exhibition of all Nations with information relative to the Collection exhibited by the Authors in Class III., and for which they received the large Council Medal.**

The announcement by the Executive Committee of their intention to form a Museum in which the Raw Materials (Vegetable, Animal, and Mineral) from all parts of the globe should be accumulated, induced the Authors to place their Collection at the disposal of the Royal Commissioners. Under subsequent arrangements, however, with the British Government, the entire Collection was deposited in the Museum of the Royal Botanic Gardens of Kew, under the immediate superintendence of

* *The award of the Jurors was in the following terms:—"To* PETER LAWSON & SON, *Edinburgh, for their admirably displayed, very complete, instructive, and scientifically arranged Collection of the Vegetable Products of Scotland; comprehending substances used for food, in the chemical arts, in medicine, in manufactures, and in house and ship building.*

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the Director, SIR WILLIAM JACKSON HOOKER, *to whom the best thanks of the Authors are due for the care and anxiety manifested by him in the conservation and judicious display of the specimens. In consequence of this arrangement, a revised edition of this work is now presented to the public, in the humble expectation that it may be found a serviceable guide to that department of the Royal Botanic Gardens, in which is contained the Vegetable Products of Scotland.*

The Synopsis comprises all Œconomic Plants indigenous to, and cultivated or cultivable in Scotland, with the exception of those used in medicine, which are contained in a separate volume, as very few are grown on the large scale in this country, and therefore of less importance to the agriculturist.

The hasty manner in which the Collection was aggregated must be pleaded in excuse for the faults of omission and commission which may be found in the following pages. Supplements to the volume will, however, be issued from time to time, in order to keep pace with the introduction of new plants, and to record the results of experiments now in progress.

EDINBURGH, FEBRUARY 2, 1852.

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DIVISION II.

PLANTS CULTIVATED FOR THEIR HERBAGE AND FORAGE.

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INTRODUCTION.

" With hand in hand to leade thee foorth,
To Ceres Campe, there to behold
A thousand things, as richlie woorth
As any pearle is woorthie gold."
Tusser, 1580.

Importance of Agriculture.

IN prefacing the List of a Collection of the Cultivated Products of Scottish Agricultural Industry, it is scarcely possible to refrain from casting a glance at the progress of an Art, now aspiring to be accounted a Science, in which the Northern part of Great Britain is proud to arrogate the honour of standing, despite the disadvantages of nature, peculiarly pre-eminent. It can never be forgotten, that, in this branch of human pursuit, the results now contributed to the World's Great Industrial Exhibition of 1851, devised by an illustrious Prince, himself an example of the scientific British Farmer, must be held to measure the proficiency at which the ingenuity of man has at length arrived, in the constant development of those resources first given to him for his sustenance, and incessantly improved for his advantage.

As Agriculture claims to be the first and most essential of all the arts, so may its varied products, and the minute and multifarious influences which science and skill have, from time to time, been able to operate, in the extension of species and the improvement of varieties brought under cultivation, read to the contemplative spectator the profoundest lesson taught by the whole enormous aggregation of objects of which they form but an humble section. This

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section is, however, in the aggregate, the rudimentary one of all the Exposition. All the products with which we are most familiar, and many of those on which the highest appreciable values have been superinduced by enriching labour, emanate from that earth, the culture of which is the object of agricultural science.

Patriarchal Ages.

The facts of man's earliest occupation need hardly be recalled in commemoration of the antiquity of this art, now brought down to an age in which it is the subject of the ablest discussion as a science. The practical instruction imparted by the first man to his children, the representatives of its two grand branches of Tillage and Pasture, and the revival of Husbandry by Noah after the Deluge, are too familiar reminiscences to be overlooked by any reader of Holy Writ. The slow simplicity with which that record evinces its progress to have been made, during not only the Patriarchal but the Prophetical ages—the nomadic life, when flocks and herds were pastured on from stage to stage, or even the mention made of dung or the dunghill, and implying an early knowledge of the use of fertilizers, hardly require to be recounted. It may not, perhaps, be out of place to mention that, in these ages, the limited range of cultivation included one product which, though popular and plentiful on the continent of Europe and throughout the East, will be found included in the present collection as a novelty amongst the food plants of Scottish cultivation. We allude to the lentil (*Ervum lens*) distinctly recorded to have constituted the red mess of pottage for which Esau sold his birthright. Even upon the settlement of the human tribes, Agriculture, far from being relinquished, continued to be the most honourable of employments. The Chaldees, regulating its operations by their sublime science, made it the foundation of their renown for the highest human lore; and the Egyptians, revelling in the fructifying inundations of their river-god the Nile, deified it altogether, not under the symbols of their ox worship only, but in the adoration of animals and even vegetables, such as leeks, onions, &c. In India, the divine honours paid to Bacchus were mythical forms of the same adoration; whilst the antient Persian kings long perpetuated a ceremony, of which the

Early use of lentils.

Agriculture of the Chaldees.

Egyptians.

Hindoos.

Persians.

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Chinese still preserve an analogous observance, of laying aside their grandeur once a month to eat with husbandmen; and the "Zenda-vesta" prescribed to the Persian saint the sowing of the ground with superior care and diligence, as a means of attaining greater religious merit than the repetition of ten thousand prayers. The Phœnician or Philistine Agriculture is commemorated in Scripture by the laying waste of their corn fields in the Israelite incursions. The classic shores of Sicily still resound with the agricultural fame of Ceres and Triptolemus.* Hesiod's poem, called "Works and Days," and Xenophon's "Economics," are evidences of the early advancement of Agriculture amongst the Greeks. And every schoolboy knows the honourable estimation in which the proud imperious Romans held the followers of the plough. The treatises of Cato, Varro, Virgil, Columella, Pliny, and Palladius are known almost as familiarly as any modern works devoted to the subject of Agriculture; and it has been asserted that the "Geoponika" of the Emperor Constantine—a large selection of the most useful Agricultural precepts of the best writers—was compiled with his own hand.

Chinese.

Phœnicians.

Greeks.

Romans.

Our own writers are agreed, that, until the appearance of Fitzherbert's celebrated "Book of Husbandry," in 1534, we remain in ignorance of the actual state of British Husbandry; knowing little beyond the fact, that, in certain districts, such as the Eastern, South, and Midland parts of England, it had long been successfully practised. The charred wheat, so frequently found amid the relics of Roman sepulture in Scotland, especially along the wall of Antoninus, and other lines of conflict or defence, would indicate, however, that these invaders had not neglected in Caledonia their accustomed efforts to introduce into their subjugated colonies, or plantations, the arts of peace as well as the evils of war. "In Europe the vine," says Humboldt, "followed the Greeks, the wheat the Romans, and the cotton the Arabs." We shall only further allude to the works of Tusser, Plattes, Hartlib, and Blith, which followed in thick succession

Early English Writers.

* In Hooker's *Journal of Botany* will be found some remarks towards the identification of the classic plants of that once fertile island.

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Early English Writers.

those of the agricultural judge of the Common Pleas, Fitzherbert, as embodying the records of early British cultivation. Perhaps it might surprise many to learn, that some of these old writers discovered, or brought into use, many new kinds of manure, though many of them were hardly treated, and one (Gabriel Plattes) was even suffered to perish in the streets of London, in abject poverty, in the palmy days of the Commonwealth, though Cromwell rewarded Hartlib with a pension of £100, for simply proposing the establishment of Flemish Husbandry in England. The more enlightened writer Evelyn, author of "Silva," (a treatise on trees,) and "Terra," (a treatise on earths,) and the ingenious Jethro Tull, father of drill husbandry, soon arose, followed by Blith, whose writings in the Dublin Transactions are so well known to foreigners; and by the indefatigable Arthur Young.

The "Gentleman Farmer" of Lord Kaimes may, perhaps, be accounted the first Scottish agricultural work of any eminence; although the "Museum Rusticum," the "Farmer's Dictionary," the "Farmer's Magazine," and even the celebrated Papers of the Bath Society, when serial and periodical issues were found necessary to supersede such a deluge of agricultural works as, for instance, occurred in the reign of James VI., found their principal echoes from our Scottish hills, in the persons of Dr. Anderson of Aberdeenshire, and others.

Modern Writers.

The subsequent works of Loudon, Low, Stephens, and Johnston, have superseded all others in the development of the modern agricultural science of Scotland. But it is less to these institutes of Agriculture than to the practical progress of cultivation, that we have to look for the intelligible history of its advancement amongst us, at least as illustrated by such a Collection as the present.

Our Agriculture traceable to the Anglo-Saxons.

Whatever part of our Agriculture may have been of Roman origin—as undoubtedly we may pronounce the wheat-growing of this as of other countries to have been—the earliest cultivation we can now retrace with certainty back from the present times, seems to be the Anglo-Saxon. The agricultural industry of these people being chiefly pastoral, as their laws still indicate, their attention would hardly extend many important degrees beyond the improvement

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The plough used by the Cœrls.

of their natural pastures; although, indeed, the plough seems to have been familiar to the Cœrls, their very possessions being reckoned by so many "plough-gates" of land. If any attention were bestowed by them on herbage or forage plants, we may ascribe to the lingering civilization, introduced by the Romans, the merit of originating in this country the practice of raising plants expressly for feeding purposes. As stated in our "Treatise on the Cultivated Grasses" they not only grew wheat, (far or spelt), barley, beans, &c., for bread, but they also cultivated lucern, red-clover, vetches, fenugreek, and other leguminous plants, for live stock, and, for a like purpose, turnip and rape; their horses and oxen being further regaled with the ripened seeds of the cerealia, and the bean, pea, and other leguminosæ.

Grain exported under the Romans.

Reference has been made to the large quantities of grain exported from Britain under the Romans, to shew that all the grains now cultivated were then raised to a considerable extent; and that the Roman soldiers, drawn from the plough, far from desolating the countries they conquered and colonized, civilized them, cultivated them, and improved their means of communication. About two centuries after their appearance in Caledonia, we find St. Jerome reproaching Celestius as a Scotchman, "that his belly was distended with Scots pottage, or hasty pudding," a meal of which the Caledonians, then beginning to be called "Scots," must have been previously innocent.

Agricultura improvements introduced by the Romans.

It may be doubted how many of these advanced practices of husbandry lingered under the Anglo-Saxons after the Romans, or survived the "groans of the Britons" at their departure. But we know that the next conquerors, the Normans, again introduced agricultural improvements—for which William the Conqueror's chamberlain, Richard de Rulos, according to Ingulphus, possessed a taste—inclosing, draining, embanking, and building, in quite as earnest a manner as if he had lived in the nineteenth century, and enjoyed the benefit of the Government grant; converting quagmires into rich meadows and fields, with a zeal not to be surpassed, even by those who may be bringing forward their produce for the Exhibition of 1851.

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Agriculture fostered by the monks.

The churchmen of these ages had more leisure to attend to the cultivation of the fields than the lay classes; and the peaceful pursuits of Agriculture suited their profession so well, that their records teem with accounts of their exertions at seed-time, hay-time, and harvest. Thomas á Becket was, according to the Chronicle of Gervase, a famous reaper. They had summer fallows for wheat, and practised repeated ploughings of their lands, as we learn from Giraldus Cambrensis. In one branch of husbandry—which has ever rendered favoured the countries in which it has been found to prevail—they indeed by far exceeded us. William of Malmsbury has left on record the facts connected with the culture of the vine, in the open air, in the vale of Gloucester; and there is no reason to doubt that, fostered by the luxurious Normans, the wines of Britain were even little inferior to those of France. These efforts of the monks we might, perhaps, classify as Horticultural rather than Agricultural—but both are embraced in the history of the Collection now exhibited.

State of Agriculture in the twelfth century.

Agriculture in Scotland at the end of the twelfth century seems to have been in a very imperfect state. A statute was passed in 1214, in the reign of Alexander II., which enacted, that such farmers as had four or more oxen or cows, should labour their lands by tilling them with a plough, and should begin to till fifteen days before Candlemas; and that such farmers as had not so many as four oxen, should delve so much, by hand and foot, as would produce a sufficient quantity of corn to support their families. Loudon supposes this law to be designed for the Highlands; for in the same parliament a very severe enactment is directed against farmers who failed in extirpating the troublesome weed called guilde (*Chrysanthemum segetum*) out of their lands; which seems to indicate a more advanced state of cultivation. Their agricultural operations, at this period, were similar, in general, to those of other parts of Britain; but threshing appears to have been performed by women, and the reaping by men.

Difficulty of introducing new species.

The difficulty attendant on the introduction of new species to this country has arisen from the arbitrary habits of some plants in refusing to accommodate themselves to a change of climate: although it is generally believed that those trans-

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ferred from a hot to a cold or temperate latitude, stand the best chance of success. The herbaceous plants have yielded most easily to this endeavour; trees and shrubs with more trouble, owing to the difficulty of affording sufficient shelter to their lengthy stems and branches. Nature works silently, and her most important active processes are hidden from our view. Their results are, however, sometimes revealed and prominently developed by the hand of the cultivator. The effects of culture in enlarging the parts of plants, is not the least of its triumphs; for by this means the poisonous *Solanum tuberosum* becomes the wholesome potato; the *Brassicæ*, or cabbage tribe, attains its remarkable magnitude; and to it the celery and carrot owe their quality; the poisonous old peach of India becomes the luscious cultivated fruit of Ispahan and Egypt; and apples, pears, cherries, plums, &c., undergo equally agreeable transformations in their redemption from a state of nature—not only the fruit and leaves, but the general habits of the rude trees being altered. In short, the parts of even ornamental plants extend, those of flowers multiply and reduplicate, and colours change and vary and improve, under the magic touch of culture.

Effects of culture on the growth of plants.

The acquisitions art has produced, are as striking as the seeming impossibilities it has vanquished. The herbaceous plants of the Levant have by this means been given to Britain, some probably as early as the period of the Romans. At the time of the Crusaders was introduced the narrow-leaved elm of the Holy Land—subsequently, the *Phaseolus vulgaris* and *Datura Stramonium* of Indian or Abyssinian origin. Buckwheat, most species of cereal grain and peas, &c., attest their Eastern origin by the oriental plants found only among them, as *Centaurea Cyanus, Lychnis Githago, Raphanus Raphanistrum, Camelina sativa, Papaver Rheas*, &c. Bruce found the wild oat (*Avena fatua*) in Abyssinia. The hill wheat and millet belong to the heights of India; and rye, though from an unknown country, was strange to the Romans. The knowledge of culinary vegetables and cultivated fruits was, certainly, first introduced into this country by this nation, and was partially preserved by their successors; for the Saxon month April was called *Sprout Kale*.

Introduction of new species.

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Indigenous fruits.

The list of the Native Fruits of this country cannot be extended beyond small purple plums, sloes, wild currants, brambles and raspberries, wood strawberries, elderberries, roanberries, cranberries, blackberries, blaeberries, hips, haws, hollyberries, hazelnuts, acorns, and beech-mast, which alone were known to the common people till the thirteenth or fourteenth century;—the wild apple or crab and wild cherry, now naturalized, being very rarely found wild. The other edible plants comprised, (of roots), earth nuts, and many others not acrid and bitter; and, (of leaves), goose-foot, sorrel, dock, &c., naturally succulent and mild in flavour.

Foreign fruits introduced by the monks.

The Roman fruits and legumes were probably lost, and those we now possess must be traced to the ecclesiastical establishments of the middle ages. The best fruits, particularly apples and pears, were brought in by the churchmen of the 12-15th centuries. The venerable pear trees still extant in the remains of their gardens and orchards are, some of them, abundantly fruitful, others in the last stage of decay. The Arbroath Oslin is nearly allied to a fruit of monkish origin—the burr-knot apple of England. Thus, it is four or five centuries only since apples, pears, cherries, gooseberries, currants, and many common vegetables were introduced into Scotland.

Scotland at one time thickly wooded.

Antient Scotland was thickly wooded; but, subsequently, so denuded as, even in Dr. Johnson's time, to merit, to a great extent, his reproach, of not containing a tree older than himself. The numerous mosses, in which trees are dug up abundantly, were all originally woods. The Scottish oak supplied timber for fences, castles, churches, and even whole towns; and the numerous places named from "woods" and "shaws" on our old maps, indicate the woodland extent of antiquity. These woodlands sheltered the country and the crops, promoted their growth, and augmented their produce. They also enabled the husbandman to rear larger herds of cattle, horses, and swine, than would now be credited. But war, neglect, and devastation, laid bare the surface of the land!

The elder (*Sambucus nigra*), for making arrows, and the plane or sycamore (*Acer Pseudo-Platanus*), were the first trees planted in Scotland; a few chestnuts

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and birches had been previously introduced in gardens. The Spanish chestnuts of Inchmahonia were derived from the monks. Some of them are 18 feet in circumference, at 6 feet from the ground. Inchmahonia was a priory of David I., and a few hundred years older than Dr. Johnson. There are, moreover, planted oaks of the same age at Buchanan, Dumbartonshire. The first extensive example of planting was set by the Earl of Haddington in forming Binning Wood. The fine timber of the lawn at Callander House was planted by the Earl of Linlithgow and Callander, in the reign of Charles II. This was followed by Sir A. Grant, 1719. General planting was prosecuted in Scotland, from 1730 to 1760, by the Dukes of Argyll and Athol, Earls of Bute, Loudoun, Hyndford, and Panmure, Fletcher of Saltoun, &c. Dr. Anderson's Essays, in 1784, gave a great stimulus to planting in Scotland, by developing the value of the larch, and its progress at Dunkeld since 1741; and this was further promoted by the example and writings of Lord Kaimes. Hedges were introduced into Scotland by the officers of Cromwell's army (one of whom, Walter Blith, was the author of the "Improver Improved"), at Inch Bucklay Brae, East Lothian, and head of Loch Tay, Perthshire. But in England, as we learn from Sir John Fortescue, the planting of hedges and hedge-row trees must have made great progress before the end of the fourteenth century.

Planting in Scotland.

Formation of hedges.

Scotland appears to have been very populous in the twelfth and thirteenth centuries. The population, too, had not been without food, for Hemingford relates, that the peas and beans, in the fields around Dirleton Castle, East Lothian, sustained the English army besieging it in 1299; and when Edward I. invaded Galloway in 1300, he purchased and exported, from Kirkcudbright to Cumberland, larger supplies of wheat than it is supposed the district could furnish even now, with all the high farming of Auchness and Myre-Mill.

Scotland populous in twelfth and thirteenth centuries.

Distracted by the successive wars of the 13th, 14th, and 15th centuries, the Agriculture of Scotland must have been at a low ebb; and the paltry law, commanding a peasant to dig daily seven feet square of ground, shews that its operations were conducted on a contracted scale. This was not much improved in 1457,

Old laws for the encouragement of Agriculture.

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Old laws.

when it was enacted that every farmer should, under a penalty, sow one firlot or bushel of wheat, half a firlot of peas, and four firlots of beans. A century later, according to Tynnis Maysen, the produce of Scotland consisted chiefly of oats and barley, while wheat had to be imported. Oats, it appears, were cultivated in a much greater, barley in a much smaller proportion than at present. Hay, as we learn from the antient chartularies, must have been made abundantly from the natural grasses.

Introduction of the Potato.

Crops hitherto had been of a scourging nature. The potato, which appeared at the end of the 16th century, as a curiosity in botanic gardens, did not come into general cultivation for two centuries afterwards. Old persons, not long deceased, could, in fact, remember when this garden rarity was served at table as an extraordinary dish, and not greatly relished, from the tubers adhering to the teeth like glue, and the flavour otherwise far from agreeable! The introduction to Scotland of this plant was, most probably, much earlier than to England, if we except the county of Lancaster. It had, however, to contend with many prejudices, not the least singular of which was the mistaken religious zeal of the people, some of whom protested that, as the potato was not mentioned in the Bible, it was a thing to be avoided. To Thomas Prentice, a common day-labourer, who lived near Kilsyth, is the honour due of bringing this useful esculent into general notice in Scotland. He procured, in 1728, some "sets" from Lancashire, and bestowed considerable care in their propagation; and as their value became known, they were eagerly sought after by his immediate neighbours. By continuing the cultivation he, in a few years, saved upwards of £200, with which he purchased a small annuity, on which he lived independently to an old age, dying at Edinburgh in the year 1792. Wheat, rye, barley, hemp, flax, hops, and buck-wheat, were the scourging English crops of the 16th century—forage or herbage plants, summer and winter tares excepted, remaining unknown till the 17th century, when Sir Richard Weston, a refugee, who returned from the Low Countries at the Reformation, introduced the growth of red clover in 1645; and to him, also, is ascribed the introduction of turnips, the cause of

Crops of the sixteenth century.

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Natural and artificial grasses.

a total revolution in the treatment of our lighter soils. The culture of saintfoin, lucerne, trefoil, and rye-grass, followed in rapid succession in England. In Scotland, however, Agriculture laboured under such depression, from various causes, that the progress of improvement was slow; and it was not probably till the eighteenth century that the artificial grasses—the use of which may always be taken as a test of the advancement of Agriculture—were resorted to. Red clover came into use in Scottish husbandry early in the eighteenth century. Rye-grass, hop-clover or trefoil, white clover, and rib-grass are noticed about the same period—saintfoin and lucerne shortly after; still later, red fescue and sheep's fescue. Sir John Sinclair's crimson clover appeared in Berwickshire in 1821; and the Italian rye-grass (introduced by ourselves) in 1831. Mr. George Stephens introduced the Alsike clover from Sweden in 1834; and, in the same year, Mr. A. Gorrie the annual villous vetch from Dantzic. The Siberian cow parsnip appeared in 1835; the blackish foxtail-grass in 1839, and the wood millet, or pheasant grass, for woodlands, in 1840. Finally, the tussac-grass of the Falkland Islands attracted notice in 1842. In the island of the Lews, in the Hebrides, and in Rousay, one of the Orkneys, this interesting plant flourishes in great luxuriance. From the latter locality we have succeeded in enriching the present Collection with magnificent specimens.

Tussac grass.

Cereal grains.

However interesting the forage and herbage plants may be, they must, necessarily, yield in importance to the cereals. And commencing with the wheat, to which such undivided attention has been given by our cultivators, the large number of varieties included in our Collection prove the almost infinite choice of character and quality which has been introduced into this extended department alone. The district of the Lothians, the carses of Gowrie, Stirling, Morayshire, and other parts of Scotland, have acquired a just celebrity as wheat growing districts, which, we believe, will be fully substantiated by an examination of our specimens.

Rye.

Rye (*Secale cereale*), though little grown in Scotland, was, in some respects, before the alterations in the Tariff, a peculiar product of the country, having been,

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Straw-plait.

in Orkney, Argyllshire, and other parts, grown exclusively for the manufacture of straw-plait, of which some very excellent specimens will be found in the Collection.

St. John's day rye.

St. John's day, or midsummer rye, introduced into France from Tuscany, by M. Vilmorin, the celebrated French seedsman, has begun to excite some notice in England; but, until 1849, it was never grown, except by way of experiment, in Scotland. In this year, however, we furnished seed of it to Mr. Alexander Ross, the intelligent land-steward of the late Lord Corehouse, by whom a very fine crop was raised, and that too, on newly-reclaimed land. Under its proper head will be found full particulars of Mr. Ross's successful cultivation of this improved variety. Generally speaking, however, the cultivation of rye is not extending in Scotland, although a cereal of considerable value.

Barley and Bere.

Scotland produces excellent Barley; but it will be impossible to detail all its uses and varieties, amidst the competing kinds and qualities of two, four, and six rowed. It may, however, be worth while to point out the Excise distinction betwixt bere, or bigg, and barley, because the Excise licenses for the Scottish distilleries are limited to one or other of these kinds, and do not extend to both; for the bere, or bigg, distiller would inevitably incur a penalty for employing barley, and *vice versa*, in the manufacture of whisky. One thing we might remark, as indicative of the defective state of barley culture, that, as compared with the four- or six-rowed, the two-rowed barley is the more prolific, having often from 60 to 70 grains for 24 to 30 of the others, which are, of all our cereals, the most in need of improvement.

Oats.

The soil and climate of Scotland are peculiarly adapted to the production of oats in perfection; and yet, far defective as the barley may be, the success of oat culture may be held up as an example of what may be done in the introduction of new and improved varieties.

Indian Corn.

Indian Corn (*Zea Mays*), has seldom been effectually ripened in Scotland. In France, Cobbett's Corn requires about three months to ripen. Ears almost, but not quite ripe, have occasionally been obtained here. Mr. Keene's forty-

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days, or Pyrenean maize, is asserted to have proved a failure in England; and the only rational experiment we have heard of recently, has been that of a Mr. Pliny Miles, an American, who visited Edinburgh in 1849, and who, from the farthest north latitude at which "corn" is ripened on the American continent, procured a barrel of the seed, and distributed it for experiment among several scientific agriculturists, among whom was Prince Albert, the Duke of Norfolk, &c., who have succeeded in ripening produce. Mr. Miles doubts if this could be done, however, in Scotland,—a doubt in which we fully share. Indian Corn.

The *Pisum sativum* and *P. arvense* are the varieties of the pea distinguished by their white or coloured flowers. The common grey field pea is very prolific. The other varieties, owing to the superior attention devoted by horticulturists, as compared with agriculturists, in improving the plants under their care, are more numerous and excellent than exemplified in any other tribe of plants whatever. The class of edible-podded, or sugar pea, for which we are indebted to the French, has, however, been rather neglected in this country. Peas.

Field beans (*Faba vulgaris*), in Scotland, are limited chiefly to the common Scottish or horse-bean. The common tic bean of France and England is seldom cultivated with us. The winter bean, introduced into England in 1825, has not yet been sufficiently tried in Scotland to enable us to pronounce an opinion on its merits. The Mazagan, from a Portuguese settlement in Africa, is restricted to the garden, and has seldom been attempted in the field in this country. The same may be said of the long pod, though very likely to succeed in field culture. The dwarf fan, or cluster, is an old and esteemed garden variety; so is the Windsor. In early districts of Scotland beans enter into the rotations, and are successfully grown on strong soils, forming excellent preparations for wheat. Field beans.

The kidney bean (*Phaseolus vulgaris* and *P. multiflorus*), the French haricot, esteemed by that people superior to any other legume, and next, if not equal in importance to wheat as a farinaceous seed for the food of man, seldom occupies beyond a small breadth in our Scottish gardens, and used by the opulent only in a green state, half grown. In France and other countries of Europe, in the Kidney beans.

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Kidney beans.

Canadas, and United States of America, besides being used in a green state, to a much greater extent than with us, kidney beans are extensively grown as a field crop; and considered by the cottagers of those countries of as much importance as potatoes by ours. The best kinds cultivated for their seed are scarcely known in Britain. Though not likely soon to form any great portion of the food of man in this country, kidney beans, in a ripe state, might yet be made to add, at a cheap rate, to the very few dishes that grace the table of the humble cottager.

Lentils.

The lentil (*Ervum lens*), in still more common European cultivation, appears, also, as a highly desirable crop for this country, and challenges especial notice under the circumstances in which the specimens included in this Collection have been reared; being the first attempt to raise lentils, as a field crop in Scotland, under the auspices of Monsieur Guillerez, an enterprising French teacher of Edinburgh, at South Queensferry, and for which the Highland and Agricultural Society of Scotland recently awarded him their large gold medal. The value and importance of his attempt ought not to be underrated; and the lentils ought to be viewed with the greater interest that, notwithstanding the neglect of their cultivation in this country, no production of the field has been more in vogue as human food, whether in antient or in modern times. They formd, as before noted, the mess of red pottage (Genesis xxv. 34,) for which Esau sold his birthright; and are repeatedly specified in Scripture (Vide 2 Sam. xvii. 25—xxiii. 11, and Ezek. iv. 9). At the present time, it is well known that abroad, they form a common diet of the lower classes; whilst the finer, or small brown kind, are not disdained as a luxury at the tables of the rich. The word "Lent" seems to be derived from this, being the principal item of subsistence during that season in Catholic countries, which, being generally poor, argues strongly for the economy which accompanies the use of this species of food, now sold at a high rate amongst us as Ervalenta, Revalenta, &c., and capable of affording a meal to six adults, in most southern European countries, at a cost of little more than a farthing for each person. As cattle food, the cultivation of the lentil has been known in this country since 1545.

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Cattle food.

It will be found, from our long list of pulses and cattle food, forming probably the most interesting group in the whole Collection, that this department has received especial attention in Scotland; and, influenced by our improved husbandry, has been pushed to its limits. We need not further particularize the different species now employed for this momentous agricultural purpose than has been already done: they run through the Graminese and Leguminosæ, and even bring us to the extended tribe of the Cruciferæ, where, commencing with the genus Brassica, or cabbage, we meet with some of the most profuse and valuable of our agricultural products. It is worth while tracing from the common or wild cabbage (*Brassica oleracea*), a poor weed-like plant of the sea-coast, the effects of culture, bringing it up to the gigantic tree or cow cabbage, the compact drumhead, the Brussels sprouts, red cabbage, cauliflower, and khol-rabi—for into all these forms has the hand of art compelled it. As a peculiarly Scottish plant, we may, perhaps, direct particular attention to the pet of our cottagers—the common plain-leaved or Scottish kale, which, we are sorry to say, has, of late, begun to degenerate, from hybridization and inattention, by getting into contiguity with German greens.

Potatoes.

Of the plants cultivated chiefly for their roots, the common potato (*Solanum tuberosum*) from its importance to the people, undoubtedly, takes the first place. Its history and varieties are too familiar to require remark. We might observe, however, that, in the novelty and diversity which the latter have attained, many of the fine old varieties formerly known in Scotland, though not utterly extinct, have almost disappeared, in favour of larger and probably heavier crops. Of this kind was the old Perthshire white, and the Forfarshire leather-coat or russet potato. The Staffold-hall, or late Wellington, a large tuber, was introduced in 1827, and obtained the Highland Society's medal. Staffold-hall (though excellent for table use, after being a month or two in the pit), the lumper, and the cups, are the kinds chiefly raised for cattle food in our best practice.

Artichokes.

Some attempts have been made, but not very successfully, to revive, in consequence of the potato failure, the esteem in which the Jerusalem artichoke (*Heli-*

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Artichokes.

anthus tuberosus) was held in this country previously to the introduction of the potato. As it is a vegetable easily raised, and no mean addition to the table, its extended cultivation is deserving of attention.

Turnips.

The most important of the turnips may, perhaps, now be considered the Swedish variety (*Brassica campestris Rutabaga*), in the growth of which our country is so much distinguished, that Mr. Morton, Editor of the *Agricultural Gazette*, and the most eminent English authorities, now admit one turnip of Scotland to be equivalent to two of England; and that they cannot, in the latter country, raise turnips equal to those grown in Scotland. This superiority (of not only the Swedish, but other varieties), is not to be solely attributed to the soil and climate being more favourable to their growth, or to any improved method of cultivation adopted by the Scottish farmer. These, undoubtedly, exercise considerable influence on the crop; but the principal cause of the superiority is to be traced, unquestionably, to the care bestowed in the growth of the seed. This fact is well known to some of the most intelligent farmers in England and Ireland, and is borne out by the continually increasing importation of Scottish-grown seed into these kingdoms. The green-top Swede, first adopted by our cultivators, has somewhat receded before the purple-top, the white Swede being an inferior, and altogether unimproved variety. The Swedish turnip, has also, from obvious advantages, greatly thrown out the turnip-rooted cabbage, so strongly recommended by continental writers. The common turnip (*Brassica rapa*), derived from the autumnal rape plant, as the Swedish from the summer rape, presents a great many more varieties than the Swedish. Their two important divisions are the white and the yellow. Dale's hybrid, the variety which is perhaps the greatest field favourite, is a mule between the purple-top Swede and the white globe, first raised, in 1822, by Mr. Robert Dale, of Liberton Mains, near Edinburgh. There is a new purple top hybrid (the Woolton), that stands in nearer relation to the Swede than Dale's. Tankard is the name applied to common field turnips of an oblong shape; and we have, accordingly, in general cultivation, the large Laurencekirk yellow tankard, and the long Cambridgeshire yellow tankard. Of the other yellows, the common yellow

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bullock, or Aberdeen yellow, comes nearest in hardness to the Swede. Mr. Skirving, of Liverpool, has improved the purple-top yellow, which bears his name. Gordon's yellow is a very superior variety known in the north-eastern districts of Scotland; but it is degenerating. A few farmers possess good stocks, and from one of them, Mr. A. Cruickshank, Sittyton, we have procured the samples which enrich the present Collection. Hood's imperial large yellow (raised by Mr. Charles Hood of Inverbrora), is also a variety very greatly esteemed wherever cultivated. Decidedly the finest-formed and richest coloured yellow that appears in the Collection is, however, Robertson's golden stone, a variety introduced, in the field practice of the last two or three years, by Mr. Robertson, near Paisley, and extensively made known, in the spring of 1850, by Mr Fyfe, Editor of the *Scottish Agricultural Journal*. In garden culture, the golden stone had been distinguished by the remarkable smallness of its tap-root, and the firmness of its neck—the tap-root being, in fact, no thicker than the tail of a mouse. It was, also, remarkably symmetrical, but by no means a large bulb, with an eminently smooth bright orange skin; but in field growth it has been found to expand immensely in size, without parting with its finer characteristics. It seems peculiarly adapted for an autumn or stubble turnip. Amongst the white varieties, the globes, when grown in rich soil, and forced beyond their natural size, are apt to display monstrosities of appearance, losing altogether their natural symmetry. Norfolk being the country where the culture of field turnips commenced, many of the original and unimproved whites still retain the name of Norfolks. Turnips.

The common beet (*Beta vulgaris campestris*), labours still under the disadvantageous, though erroneous, impression prevalent, that, however well field beet may succeed in England, it is unsuited to the climate and cultivation of Scotland. The manufacture of sugar from this source has occasioned France far to outstrip us in the cultivation of beet. But we can still boast of producing admirable specimens, if not extensive quantities, of mangold wurzel. Beet. Mangold wurzel.

Derived from the *Daucus carota*, a common poisonous plant of no importance, the cultivated varieties of the carrot begin to enter largely into the rural economy Carrot.

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Carrot. of Scotland. Like the mangold wurzel, the manufacture of sugar and the use of the distillery, renders the continental cultivation of the carrot more extensive than ours; and our cultivated varieties, although very frequently found occupying the fields, are still distinguished as *D. carota hortensis*, or garden carrots.

Parsnip. The parsnip (*Pastinaca sativa)*, most successfully cultivated in the south of England, Jersey, Guernsey, and France, has, in Scotland, been the subject of experiment, only, as a field crop.

Flax. Flax (*Linum usitatissimum*), has excited strongly the hopes of the Scottish farmer within these recent years; and we believe that the prejudices against its exhausting character as a crop, precluding it from rotations, and prescribing it in the covenants of every Scottish lease, must and will rapidly disappear before the glance of agricultural enlightenment and the achievements of science. The impression has hitherto been, that the richest soil was demanded for the growth of flax, and would inevitably be sacrificed to its culture, if introduced into the rotation oftener than once in twenty years. In the north, such men as Mr. Thomson of Banchory, and Sir James H. Dalrymple Elphinstone, were, nevertheless, ready to accept even the twenty years rotation; but they experienced another difficulty: the culture of flax having fallen into fifty years desuetude in Scotland, the parish steeping pool and district scutching mill had been abolished, and insuperable difficulties beset the preparation of the fibre. In the west, on the rich-bottomed lands of Lochwinnoch, the heavy crops of flax now raised are purchased in a green state by Irish agents, and the farmer relieved of this dilemma. We find, also, that Mr. Nelson of Greenwell Farm, near Falkirk, has, for the last two seasons, dissipated effectually the notion that none but the richest soil will answer for flax, by growing, successively, crops of seven and then of thirty acres, with the most unquestionable success, in the highest and most inhospitable wastes in the Scottish lowlands. The specimens of the flax, in its various stages, in our Collection, were grown on the estate of Mr. Grant Duff of Eden, in Banffshire.

Hemp. Hemp, (*Cannabis sativa*), a native of a warm climate, is rather tender for culti-

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vation in Scotland, though found growing in Suffolk and Lincolnshire. A tree mallow, (*Lavatera arborea*), however, capable of producing very strong fibre for making ropes, grows naturally on our sea rocks or cliffs, and is a native of the celebrated Bass Rock, in the Firth of Forth. Tree mallow.

The cultivation of the *Camelina sativa*, or gold of pleasure, for its oil, has been the subject of some agricultural speculation in this country; so, also, that of the common sunflower (*Helianthus annuus*), which yields an oil little inferior to the olive, the seeds being made into meal and bread by the Portuguese, roasted and used as a substitute for coffee in America, and peculiarly adapted for the feeding of domestic fowl, pheasants, and other game. Gold of pleasure. Sunflower.

The white poppy (*Papaver somniferum album*), from which opium is prepared, is grown pretty extensively in Scotland for medicinal purposes. White poppy.

The mints (natives of England)—peppermint (*Mentha piperita*) and spearmint (*M. viridis*), besides essential oils, yield a spirit and simple water used in medicine, and by confectioners. Mint.

The common lavender (*Lavandula spica*), introduced in 1568, from the south of Europe, yields exquisite distilled waters, and forms beautiful dwarf hedges, when properly clipped. Lavender.

The dyer's woad (*Isatis tinctoria*,) or *glustum*, (from the Celtic *glus*, blue,) is one of the principal native plants in culture for its colouring matter or dye; though almost superseded in Scotland by the low price and general use of indigo. Woad.

All the native vegetable dyes are, however, falling into disuse, from the cheapness and facility with which those of foreign origin can be procured. In our Collection will be found specimens of all the primitive dyes of the Highlanders, with which they were enabled to form the peculiar patterns of their tartans. Native dye-plants.

The common carraway (*Carum carui*) has been grown in the Isle of Bute equal in quality to the medium samples of the English and Dutch markets. Carraway.

The coriander (*Coriandrum sativum*,) is sometimes grown in Scotland, although, comparatively, few trials have been made. Coriander.

We have had used as substitutes for, or adulterations of coffee, the common Chiccory.

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Substitutes for coffee.

chiccory (*Cichorium Intybus*), and the roots of the dandelion (*Leontodon Taraxacum*), as also the beet, cut in small pieces, roasted and ground; and the seeds of goose-grass (*Galium aparine*), common yellow iris, (*Iris Pseud-acorus*), as well as wheat and rye.

Substitutes for tea.

As substitutes for tea, the leaves of sweet American birch or mountain mahogany (*Betula Lenta*), marsh Labrador tea plant (*Ledrum Palustri*), black currant (*Ribes nigrum*), balsamine sage (*Salvia tomentosa*), agrimony *Agrimonia Eupatoria*), speedwell (*Veronica officinalis*), gromwella, New Zealand tea (*Lithospermum officinale*), sweet-smelling golden rod (*Solidago odora*), common dwarf ditto (*S. Virgaurea*), sloe tree (*Prunus spinosa*), ash (*Fraxinus excelsior*), and hawthorn (*Cratægus oxycantha*).

Tobacco.

Common green tobacco (*Nicotiana Rustica*), under the present prohibition of the law, is rarely grown, even as a garden curiosity, which the law permits. It ripens seed in Scotland about the middle of August. The seeds will retain their vegetative powers for a number of seasons, lying in the ground; so that where tobacco once has been, the seedlings will spring up afterwards for a series of years.

Timber plants.

The Timber Plants of Scotland, could they find a place in all their majesty in this Collection, would form a striking feature of the Exhibition. The Coniferæ alone would, in beauty, interest, and variety, strike astonishment, no less by their exotic-like aspect, and regular but graceful contour, than from a consideration of their economical value. But for this order, it would not be possible to find even a tolerably-sized mast for an ordinary vessel; or to construct a building, of a given strength and durability, without double the expense of masonry.

Native Scots fir.

The *Pinus sylvestris* grows naturally in Scotland, as in most of the northern countries of Europe; but the variety *P. horizontalis*, or horizontal-branched wild pine is regarded by Don as the true Scots fir, which once abounded in our grand natural pine forests. Besides the value of the *Pinus sylvestris* as a timber tree, it yields, on incision, a liquid resin, which flows freely from May to September, from which are obtained yellow resin, essential oil of turpentine, common resin,

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and black resin, or colophony. Tar also flows, by burning the root, trunk, or branches, in a close furnace. Pitch is got by melting coarse resin with a proportion of tar; and lamp-black, by burning the precipitate of the tar and pitch. The Laplanders will live throughout their dreary winter on bread made from the inner bark of this tree mixed with rye-meal. Scots fir.

The *Pinus Pinaster*, of which some fine specimens will be found in the Collection, introduced into England about 1596, has flourished remarkably well at various places in Scotland, as Fingask, Dunrobin Castle, Errol House, and Gadgirth. American and Indian pines, of wonderful altitude, beauty, and variety, have yet more recently been grown or introduced; for a particular description of which we must refer the reader to our "Synopsis of the Fir Tribe," recently published. Pinaster.

The common larch (*Larix europæa*) was introduced from the Alps in 1629, although two planted at Dunkeld, in 1741, have been erroneously reputed the oldest larch trees in Great Britain. They are, however, still vigorous, when whole plantations of younger growth have perished under the disease termed "Larch Rot,"—a disease which commences at the roots and proceeds upwards, the cause of which has, however, hitherto eluded all the laboured investigations which have been made. A descriptive account of the other woods in the Collection, will be found on reference to the catalogue. Larch.

We have thus run over the leading facts of our Agricultural progress, and the most conspicuous of those items that may be classed amongst its results. We hope that sufficient data have been afforded for appreciating the general scope and bearing of this Collection, and leading the spectator to make a more minute and particular investigation for himself. To enter further into detail here would be unnecessary; nor, indeed, could any satisfactory particulars be embodied in a very popular shape, even though the embodying of them in such a shape were necessary: but it is not necessary. All essential information, however, as to the nature and properties of the vegetable products, that have been collected for the purpose of illustrating the Agricultural Resources of Conclusion.

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Conclusion.

Scotland, will be found noticed in the following pages—not, perhaps, in a strictly scientific manner, (for the object of the present publication is a popular one), but in such orders or groups as will readily exhibit their relative economical use and value. The desire has been to render clear and accessible to the many thousands who may congregate at this Great Industrial Exhibition of all Nations, a knowledge of the leading characters of those plants, which are, by art or culture, rendered subservient to the wants of man. In fact, to convey information in so correct and concise a manner, as to "command the attention of all thinking persons, and to make those who have never opened the Book of Nature, and to whom the wild world has hitherto seemed a wilderness, to look upon it as at once a garden and a library."

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DIVISION I.

PLANTS CULTIVATED FOR THEIR FARINACEOUS SEEDS, TOGETHER WITH THEIR STRAW OR HAULM.

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SECT. I.—CEREAL GRASSES.

I. TRITICUM* (*Linn*).

Belonging to Class Endogens, or Monocotyledons; Glumal Alliance of Lindley; Natural Order Graminaceæ; Linn. Cl. 3, *Or.* 2.

English—WHEAT.	*Danish*—HVEDE.	*Greek*—PUROS.
French—FROMENT, BLE.	*Swedish*—HVETE.	*Arabic*—HINTEH.
Italian—GRANO.	*Islandic*—HVEITI.	*Persian*—GUNDOOM.
German—WEIZEN.	*Russian*—PSIENITSA.	*Hindu*—GEHOON.
Dutch—TARW.	*Polish*—PSZENICA.	*Indian*—KUNUK.
Spanish and Port.—TRIGO.	*Hebrew*—CHITTAH.	*Egyptian*—KAMICK.

"Of golden wheat, the strength of human life."—PHILLIPS.

Origin of wheat.

NO authentic information exists as to the native country of Wheat. Most writers suppose it indigenous, generally, to Asia and Africa; and a few point out Egypt, more particularly, as the land to which we are indebted for this important cereal,—a supposition most probably drawn from Homer, who, in the "Odyssey," says—

> "Then the far country waves with golden corn;
> The soil *untill'd* a ready harvest yields,
> With wheat and barley wave the golden fields:"

an inference being drawn from the untilled soil that the grain must have been produced spontaneously. But a more valuable authority might have been cited:

* From *tritum*, rubbed, in allusion to the grain being originally rubbed down to make it eatable.

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Origin of wheat.

for we find mention made of corn, generally, in Genesis, xliii. ("Now when Jacob saw that there was *corn* in Egypt"), and of wheat, specially, in the Book of Exodus (ix. 32). Dr. Royle, in his *Himalayan Botany*, says, that wheat having been one of the earliest cultivated grains, is most probably of Asiatic origin; and, in reference to its being found in India, remarks, that as both wheat and barley are cultivated in the plains in the winter months, where none of the species of these genera are indigenous, it is probable that both have been introduced from the north, that is, from the Persian, and, perhaps, from the Tartarian region, where they are most successfully and abundantly cultivated. The similarity of the Hebrew, the Egyptian, and the Indian name for Wheat, is also cited by Dr. Royle, as indicating not only communication between the nations of antiquity, but as pointing to the common origin of wheat. The fact that no part of the world has yet been discovered in which wheat (the staff of life) is found growing spontaneously, affords a striking and beautiful illustration of the sentence pronounced by God to the first man: "In the sweat of thy face shalt thou eat bread till thou return unto the ground."

Introduction of wheat.

It is impossible to hazard even a conjecture as to what period wheat was first introduced to this country; for although Cæsar is reported to have found *corn* growing on the coast, the particular kind is not known.

Its general diffusion.

Wheat is the most generally diffused of all our grains, being not only cultivated in temperate latitudes, but in very hot and very cold climates, even to the inhospitable shores of Lapland.

Species in cultivation.

The multiplicity of names which have been adopted by botanists to distinguish the different species, are, to say the least, of very questionable utility. That there are several distinct species, admits of no doubt; but, after an experience of many years, in which constant opportunities have occurred for studying the distinctive characteristics of all the species hitherto determined, we have no hesitation in stating that the whole may be reduced to *seven*, namely:—1. *Sativum*, 2. *Turgidum*, 3. *Durum*, 4. *Polonicum*, 5. *Amylleum*, 6. *Spelta*, 7. *Monococcum*. The three last named have adhesive chaff, and are not cultivated, or capable of

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being cultivated, with advantage, in Britain; while *T. Polonicum* is only suited to the torrid zones. We have, consequently, but three species grown in this country:— Varieties cultivated in Scotland.

1° Triticum sativum — Common Cultivated Wheat.
2° „ turgidum — Turgid Wheat.
3° „ durum — Hard Wheat.

The last of these is very little known in Scotland, or indeed any other part of the United Kingdom, and, except for experiment, is never grown.

1°. TRITICUM SATIVUM.

This species comprehends nearly the whole of the cultivated varieties, and may be arranged either with reference to the colour of the grain, as red and white wheats, or by the form of the ear. The latter admits of three classes:— *1st.* A short, close, and compact ear, occasioned by the spikelets being set near each other on the rachis or jointed stem, which has a tendency to curtail the length and increase the breadth of the chaff and spikelets, of which Piper's Thick-set may be taken as a type. *2nd.* An ear of medium length and breadth, not so broad, but longer than the former, and the spikelets placed just so close upon the rachis as to screen it from view; the chaff of medium length and breadth. The Chiddam may be considered the type of this class, which includes all the most profitable and generally cultivated varieties. *3rd.* The ear long and narrow, the spikelets of which are set apart, or so far asunder as to permit the rachis to be easily seen between them. The variety known as Bellevue Talavera, is a fair type of this class. In the following arrangement, however, we adopt the simple one of colour, red and white, classing those sometimes called yellow wheats, according to their dark or light shade, namely,— those of a dull or brownish hue with the Red, and those of a creamy or straw colour with the White. T. sativum.

WHITE VARIETIES. White Varieties.

NOTE.—Those distinguished by an asterisk are the most commonly cultivated in Scotland.

1. **Archer's Prolific.**—Ear of medium length, compact, beardless. The grain of medium size, thin skinned, and altogether, forms a very beautiful sample. 1

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T. SATIVUM. White

2 **2. Barbary Thick-Chaffed.**—Straw rather under the medium length, slender, but remarkably firm and tough, being generally perfectly solid; ear short and slender; chaff white, smooth, very thick, and rigid; grain large, oblong, lightish-yellow coloured and somewhat flinty, bearing a considerable resemblance in sample to some varieties of *T. durum*. Although an early spring wheat, this is not likely to meet with attention from British growers, unless its peculiarly-formed straw should be found useful in some branch of manufacture.

3 **3. Baxter's.**—Ear of medium length; grain round and deeply furrowed; straw strong, and not liable to lodge. The favourable appearance of the sample of this variety, when first brought into notice, led us to continue our experiments on its growth for several years; but the results have not been satisfactory.

4 **4. Berkshire Improved.**—Very similar to Archer's Prolific.

5 **5. Brittany, or Breedon.**—With the exception of the grain being somewhat larger, has a very general resemblance to Archer's Prolific.

6 **6. Brodie's.**—Introduced in 1821, and so named in compliment to its discoverer, the late Mr. Brodie, of Ormiston. The beauty of sample, and success attending the early culture of this wheat, rendered it a favourite with growers. It is considered not only superior in sample to Hunter's, but also more productive, taller in straw, and about a week or ten days earlier; which latter property especially suits it for spring sowing. Of late years its culture has been pretty extensively practised in Berwickshire, the Lothians, and other wheat districts, where it is generally liked.

7 **7. Brown-Strawed.**—Ear of medium length; the upper spikelets shortly bearded; grain of medium size, forming a fair sample.

8 **8. Cape, Bearded.**—Ears white and long; grain elongated, large, and in general well filled, whitish coloured, and forming rather a superior sample. The French reckon this one of their best spring wheats; they find, however, that it is apt to degenerate unless the seed be often changed.

9 **9. Caucasian Bearded Yellow.**—Straw long, coarse, and soft, consequently liable to lodge in wet seasons; ear long and heavy; grain large, oblong,

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yellowish coloured, and rather thick skinned, forming a good heavy sample. In France it is found to succeed either as a spring or winter wheat; but although reported to be more than usually prolific, further experience is still required to ascertain its true merits.

10

10. Chevalier Ten-Rowed.—Straw of fully more than medium length, firm, stout, and not liable to lodge; ear erect, rather short, but very compact; grain thin skinned, and forms a superior heavy sample. Of the origin of this variety, which is also known by the name of Brown's Chevalier, a correct account has not been obtained; it, however, bears a considerable resemblance to a sort which has been long known in the south of England by the name of "Salmon Wheat, No. 35," of which it is very likely an improved variety. It has been grown in Scotland for some years; and although it presents rather a weakly appearance in the winter months, yet it is found to recover rapidly in spring, and is, on the whole, reckoned hardy, as well as prolific, and deserving of general cultivation in good wheat districts. Under the name of Chevalier, several reputed varieties have been of late years brought into public notice,—as Fullard's Chevalier, Chevalier Prolific, Courtney's Chevalier, the last of which will be found further noticed under the name of Hickling's Prolific.

11

11. Chiddam.—This variety was procured, in 1835, from Mark Lane, by Mr. Robb, Gorgie Mains, near Edinburgh, under the above name. Its grain is slightly more elongated than that of the Uxbridge, rather thinner in skin, and more transparent, or flinty-like. It is a prolific variety, a free grower, and tillers freely in spring.

12

12. Chili Square.—Straw and ear of a stiff upright habit of growth; the latter seldom exceeding an inch and a half in length, by about three quarters of an inch in breadth, a little compressed on two sides; grain about forty in each ear, small, elongated, and of a whitish colour.

13

13. Chili Small Spring.—Very similar to the above, except in the length of the ear, which is much smaller, and the fineness of the straw, which forcibly contrasts with the strong and coarse appearance of the other.

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14 **14. Cluster, Dwarf.**—A remarkably short and firm-strawed variety, which chiefly distinguishes it from the next, and especially suits it for rich soils, where the common sorts are apt to acquire too great a length of straw, and, in consequence, become lodged. It may be termed medium hardy, tillers well in spring, and yields a good return, both in quality and sample. It was first imported from England to East Lothian in 1838, where the name of Cluster was applied to it, on account of the thick and dense form of the ear, which, from the rigidity of its straw, is more than usually erect.

15 **15. Cluster, Tall.**—Straw tall, of medium strength, but rather apt to lodge when grown in rich soils; ear generally under three inches in length, square, and very compact; grain rather small, short, and of a dullish white colour, but forming a good heavy sample. This variety was introduced from England, under the name of Dudney Wheat, in 1837, by Mr. Arch. Scott, of Southfield, East Lothian, who changed its name to that of Tall Cluster, from its similarity in form of ear to the last.

16 **16. Dantzic.**—Straw medium length; ear long, tapering, small, and thinly set; grain elongated, very small, and of a beautiful white colour. Although this sort yields a most beautiful sample, yet from its unproductiveness it does not appear that its cultivation in this country would be attended with any beneficial advantage.

17 **17. Dantzic, Red.**—This variety differs so little from the white, that it has been considered as well not to separate them, by placing the present amongst the red wheats. The colour of the ear is a light-reddish brown, and that of the grain is only a slight shade darker than the last sort; in other respects they bear a marked resemblance. These Dantzic wheats are rather late in ripening, and the samples grown in this country are very inferior in appearance to those from Dantzic; thus shewing that our climate is not so well adapted for its culture as that of the countries adjacent to the Baltic, from whence it is imported.

18 **18. Dantzic, Woolly-Eared.**—Ear of medium length; grain medium and oblong, very prolific, and only slightly woolly.

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White.

19. Dantzic Yellow.—Ear of medium length; grain medium, and of a rich creamy colour. A prolific variety. 19

20. Duck's Bill Yellow.—Young plants very hardy; straw short, stout, and upright; ear, two to two and a half inches long, by about three quarters in breadth, and remarkably compact; grain medium sized, oblong, plump, lightish-yellow, and transparent, but liable to be shaken even by slight winds. We are indebted for this sort to Colonel Le Couteur of Jersey, to which island it was introduced from Keil in the Baltic, where, as well as in Newfoundland, it is much grown, being very prolific, and well suited for these climates; but it is said to yield an inferior flour. The name, Duck's Bill, has been applied, and seemingly with less propriety, to a totally different sort, belonging to the species *T. turgidum*. 20

21. Earl Spencer.—Ear of medium length and close set; grain medium and oblong, forming a superior sample. 21

22. Early Striped Chaffed.—This variety we procured from our friends M. Vilmorin & Co. of Paris, who had it sent them originally from England by Mr. Samuel Taylor. The result of the trials in our Experimental Grounds has determined its identity with the Whitworth, which see. 22

23. Eclipse.—Young plants hardy, and becoming bushy, or tillering well, in spring; straw of more than ordinary length, thick, and firm in texture; ear upright, or very slightly drooping when ripe, regularly formed, and compact; grain of a round or slightly oblong shape, very white and thin skinned, forming a superior sample. This sort was introduced to Scotland from the south of England in 1836, but, like many others of the finer varieties from that quarter, its produce has been found to deteriorate in quality; thus tending to justify a very prevalent opinion, that, in order to grow the finer wheats to the greatest perfection, it is occasionally necessary to procure a change of seed from a more favourable climate. 23

24. Eley's Gigantic.—This was said to be discovered in 1832 by Mr. Charles Eley, Sion Hill, near Isleworth; but, after a series of trials in our Experi- 24

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mental Grounds, extending over three seasons, we could detect no difference between it and Whittington's. It must, therefore, be considered synonymous with this variety.

25 **25. Eltham.**—We procured samples of this variety from the London market; but the result of the trials in our Experimental Grounds prove it to be identical with the Whitworth, which see.

26 **26. Essex.**—This variety resembles the Uxbridge in its ears, and Hunter's and Mungoswell's in the size and shape of its grain; but differs from them in being of a whiter colour, more transparent, and thinner skinned. This is also highly esteemed by the English millers, but has not been sufficiently tried in Scotland to ascertain whether or not it is adapted for our climate.

27 **27. Fenton.**—Ear of medium length; grain medium, of a dull white. A very hardy prolific variety.

28 **28. Flanders.**—This variety is held in great esteem in the Northern Departments of France; it apparently differs little from the Essex, and that small difference may be merely the effects of climate and cultivation.

29 **29. Golden Swan.**—Ear of medium length; grain medium, oblong, fine white, and forming a beautiful sample.

30 **30. Gorrie's Prolific.**—Ear of medium length, with a few scattered awns; chaff yellowish white, and distinctly shaded; grain rather dark, forming a fair sample.

31 **31. Gregorian.**—Compared with either Hunter's or Mungoswells, the ears of this sort are longer, the straw stiffer and more upright, the ear being less bent to the side, while the grain is shorter, rather lighter in colour, and more transparent. It is hardy, tillers well in spring, and is deservedly esteemed.

32 **32. Hartswood.**—Ear of medium length, with a few scattered awns; spikelets spreading; grain of medium quality, forming a good sample; straw long and coarse.

33 **33. Hedgehog Yellow Bearded.**—The *Blé Herrisson* of the French. Straw very short and rather brittle; ear also very short, crowded, and thickly furnished with long spreading and somewhat tortuose awns; grain reddish or deep yellow,

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very small, hard, and of an oblong shape, forming an inferior sample. This variety is recommended by the French as being hardy, prolific, and fitted either for autumn or spring sowing; but our experiments shew that it is only deserving of attention, from its being a distinct and curious variety, for collections.

34

34. Hopetoun.—This variety is the produce of a single ear of an unusual size, which was discovered, in 1832, on Mr. Reid's farm of Drem, East-Lothian, by his steward, Alexander Douglas, who presented it to Mr. Sherriff, originator of the well-known Hopetoun oat, and then occupier of the neighbouring farm of Mungoswells. Mr. S. having left Mungoswells, in 1846, gave the whole produce of his Hopetoun wheat, then amounting to about five bushels, to Mr. James Reid, who has since grown it with success. It is now pretty widely distributed amongst growers, who generally consider it an improved stock or subvariety of Hunter's.

35

35. Hungarian.—This wheat is said to have been first introduced into the neighbourhood of Blois, in France (province of Orleanois), from England, some years since, and its cultivation is now attended with much success, both in that district and in several others of the north of France, where it is sometimes known by the name of *Froment blé Anglois*, or English Wheat. This variety closely resembles the Uxbridge and Chiddam, from which, however, it is easily distinguished. It is a week, or nearly so, longer in ripening than the common sorts; but is, from its superior qualities, well deserving of a fair trial in this country.

36

36. Hunter's.—Named in compliment to the late Mr. Hunter of Tynefield, East-Lothian, who first discovered it growing in a field on Coldingham Muir, Berwickshire. This wheat is the most extensively cultivated of any genuine or unmixed variety in Scotland. Ear medium sized, thick, tapering a little towards the point, slightly pendant, or bending to one side; grain rather large, elongated, tapering very slightly towards the extremity, plump, and of a uniform dull white, or very light-brownish colour throughout.

37

37. Indian White.—Straw short and stout; ear rather under the medium size; grain of a somewhat transparent whitish colour, ordinary size, and good

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quality. This peculiar chaffed variety was received by our firm from M. Vilmorin, Paris, in 1839, with no particulars as to its history or quality, except that it was obtained from the East Indies. It is extremely doubtful whether it will ever deserve the attention of growers, unless, perhaps, in warm climates.

38 **38. Jonas's Prolific.**—Ear of medium length. This variety is but of recent introduction, and is now under experiment by us.

39 **39. Keller's Spring.**—Ear small, tapering, and slightly bearded; grain roundish and of a very delicate cream colour; straw thin, but strong. A very excellent variety, well deserving the attention of growers.

40 **40. Le Couteur's Compact.**—Raised in 1832 by Colonel Le Couteur of Bellevue, Jersey. It is hardy and tillers remarkably well in spring; produces fine firm straw, rather under the medium length, and, consequently, not liable to lodge, even on the richest lands; the ear is short and compact; grain of ordinary size, oblong, and rather thick skinned, forming a good sample. In addition to these characteristics, Col. Le C. finds it to be rather early, highly productive, and not at all liable to shed its seeds in high winds, even when very ripe. Several trials, on a limited extent, have been made with this sort in Scotland, none of which seem to have been attended with any remarkable results; but further experiments are yet requisite to define its actual merits.

41 **41. Le Couteur's Round.**—An illustrative figure of this variety, along with that of the last and others, is given by Colonel Le Couteur in his work "On the Varieties, Properties, and Classification of Wheat," in which work he expresses an opinion that it may be the same with the Hungarian, he having been only acquainted with the latter by description. The results of experiment prove them, however, to be essentially different, the only characteristic common to both being the small size and round shape of the grain—Col. Le C.'s having a shorter ear and shorter straw, while it yields a thicker skinned inferior sample. Not deserving of cultivation except for straw-plait, for which its firm, tough, and very white straw seems, in an especial manner, to recommend it.

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42. Le Couteur's Jersey Dantzic.—The young plants are hardy, tiller remarkably well in spring, and bloom before most other sorts; straw of more than usual length, slender, and somewhat liable to lodge on rich soils; ear moderately dense, and drooping or bending to one side when ripe; grain of an oblong shape and transparent light colour, forming a medium sample. Col. Le C. applied the name of Jersey Dantzic to this, from having obtained it out of a cargo of wheat imported from Dantzic; it is not, however, to be confounded either with the following, or the White Dantzic; to neither of which it bears much resemblance. From experiments which the Colonel made with this sort, he found that 12 lbs. of the flour yielded 24 lbs. of bread, which was of superior quality, being dry and white coloured. In 1839, several quarters of this wheat were grown on the farm of Long Niddry, East Lothian, by Mr. Henderson, who found that the return and apparent quality of its sample, were not such as to warrant a continuance of culture. 42

43. Le Couteur's No. 5 Jersey Dantzic.—Straw softish and of medium length; ear long, slender, and generally a little bent or curved; spikelets very remote, and usually containing two or three large, oblong, thickish-skinned grains, which form rather an inferior sample. Col. Le C. selected this variety, as well as the last and some others, from a cargo of Dantzic wheat, and was induced to cultivate it on observing its hardiness and early habits, qualities which he considers may render it alike important for growing as a winter wheat, in elevated late districts, or as a spring wheat, in more genial situations. As yet, this sort has not been sufficiently tried in Scotland to warrant an opinion as to its real merits. 43

44. Leghorn.—Cultivated in the south of Europe for its straw, which is there employed for the purpose of making the famous Leghorn plait; it was introduced into this country for the same purpose, but is now entirely superseded by the common rye. This name, however, appears not to apply to any one particular variety, but, indiscriminately, to white and red, bearded and beardless, sorts; the white beardless varieties seem, however, to be the most numerous. 44

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The whole, apparently, belong to the early or spring sorts, which is no doubt caused by their being sown in their native country always in March, on light sharp sandy soils, on the banks of the Arno. When intended for plait, the seed is sown very thick, and the plants pulled in flower, or before the grain is formed, when they are generally about eighteen inches in height. It is then bleached and tied up in the same manner as we do flax, previous to selecting the portion of the stalk to be used in the manufacture, which is that between the ear and the first knot or joint of the straw.

45 **45. Malaga.**—Straw of medium length, fine, and rather brittle; ear erect and thin; grain large, somewhat oblong, white, and thin skinned, forming a superior sample. This variety was received in autumn 1840 from London, along with the Barbary Thick-chaffed; but, judging from the results of our own experiments, together with its general characteristics, it appears too tender and fine for the climate of this country.

46 **46. Mummy.**—Ear of medium length and close; grain large, of a dull white; straw long and stiff.

47 **47. Mungoswells.**—This variety is the produce of a few ears presenting a superior appearance, which Mr. Patrick Shirreff, Mungoswells, East-Lothian, discovered in a field some years since. It is generally accounted a few days earlier, and tillers more freely in spring than Hunter's; it is also said to be more prolific, but this is disputed. In sample, this sort is so like Hunter's as often to be mistaken by dealers for it, and *vice versa*.

48 **48. Naples.**—Chaff delicately tinged with a dull yellow; grain large, considerably elongated, and of a yellowish-white colour; weighs well in sample. This sort has been cultivated for some years in the neighbourhood of Paris, but not with the expected success, the climate being considered too cold for it in winter. There is, therefore, no chance of its being grown to advantage in this country, particularly as it ripens very late in the season, and the grain, although equally large, acquires more of a hard, horny, or flinty nature, than when grown in the south of France.

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49. Naples Bearded.—Straw short and somewhat tender; ear rather shorter, but fully more compact than the generality of bearded spring wheats; grain large, oblong, and of a dark brown transparent colour, forming a rather coarse-looking sample. This sort was received in 1839, from France; but it does not seem to be possessed of any qualities to recommend it in preference to the more common kinds. 49

50. Odessa.—Of a considerable number of wheats introduced into France from Odessa at various times, this seems to be almost the only one meriting, or at least retained, in cultivation. It was first introduced into the province of Auvergne, by M. Bonfils, where its cultivation is rapidly increasing, notwithstanding it is more sensibly affected by cold than the common wheats of the country. Ear rather loose and irregular, inclining in colour to a light brown; grain long, and tapering slightly towards the point; above an average size, and whitish coloured. The French say that it is equally applicable for spring as for winter sowing; but a sample sown in our Experimental Grounds was later, by nearly a fortnight, than any of our common winter wheats. 50

51. Oxford Prize.—*A variety introduced from England in 1839, and so called, from having obtained the first premium at the English Agricultural Society's show, held there that season, but it bears such a near resemblance to Brodie's, that several good judges have been induced to consider them the same, only slightly altered by the influence of climate, &c.; and this appears the more likely, from its having been ascertained that the late Mr. Brodie was in the practice of sending his seed-wheat to several acquaintances in that district of England. 51

52. Painted Stalked.—Straw short, tough, and of a beautiful reddish or purple colour; ear under the medium size, erect or slightly inclined; grain of medium size, slightly oblong shape, thinnish skin, and forming a good sample. This variety was received from France in 1839, under the name of *Blé Pictet*, and is found to retain the characteristic colour of its straw under cultivation, but has no other real property to recommend it. 52

53. Pearl.—*Imported from Middlesex to Leith in 1838, by Mr. John Watson, 53

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corn-merchant there; and was then considered as being very closely allied to the Uxbridge, and, more recently, many growers were of opinion that it was identical with the Oxford Prize, or an improved variety of Brodie's, compared with which, it is, however, shorter and smaller in grain, as well as heavier and superior in sample; it also ripens fully earlier, and produces stiff and rather long straw.

54 **54. Pearl Red Chaff.**—*Ear of medium length; grain roundish and white, similar to Old Uxbridge, and very prolific.

55 **55. Pomeranian.**—Ear of medium length, with a few scattered awns; spikelets distant; straw fine and strong.

56 **56. Red Strawed White.**—*Ear of medium length; grain medium, oblong, white, and thin skinned, forming a very superior sample.

57 **57. Salmon.**—Straw stout and rather under the medium length; grain of ordinary size, somewhat oblong in shape, thin skinned, and of a transparent whitish or salmon colour, forming a superior sample. In some of the southern counties of England, where this sort is pretty extensively grown, it is considered both hardy and prolific; but although introduced at various times, growers in Scotland do not seem to have found these properties so permanent, or its characteristics so distinct, as to have led them to cultivate it to any extent.

58 **58. Sandwich Islands.**—Ear of medium length; grain long and keeled; straw reddish and very strong. This variety is said, but on doubtful authority, to be raised from seed grown in the Sandwich Islands, the produce of some grains dropped there by birds of passage.

59 **59. Saughton Yellow.**—*Ear rather long; grain plump and round, forming a fair sample; straw strong, and rather closely jointed. This variety was raised by Mr. Dickson of Saughton Mains, near Edinburgh, and is likely to prove a favourite in the market.

60 **60. Shanry.**—Ear longer and more compact than that of the Common Bearded Winter; beards or awns much shorter; grain larger and softer, of a light-yellowish colour. Discovered by Mr. A. Gorrie, who picked it in a field

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on the farm of Shanry, hence its name. This is certainly a very superior variety of bearded winter wheat.

61

61. Sicilian, Small Bearded.—This differs from all other varieties of bearded wheats, in the closeness of its ear, in the hard-like, smooth, shining appearance of its chaff, which resembles, in some degree, that of the Hard Sicilian, but differs from it in the shape and texture of its grain. Ear rather under the medium size; grain rather large, slightly elongated, and flinty; awns upright, longer than the ear.

62

62. Sicilian Square Spring.—This sort differs little from Spring Small Square, except in the awns on the point of the ear, being elongated to rather more than the length of the spikelets (they being almost wanting in the other); the grain is also of a brighter red, and more flinty. This is reckoned, in France, to be one of their earliest spring wheats.

63

63. Silver Drop.—Ear of medium length; grain small, roundish, similar to Uxbridge.

64

64. Smoothy's.—Ear short and slightly bearded; grain roundish; the chaff reddish; straw of medium length and soft.

65

65. Snow-Drop.—Ear of medium length; grain medium, but a little more elongated than Uxbridge, otherwise similar.

66

66. Spring, Chinese Bearded.—This variety was introduced from Germany by Loudon, and distributed by him amongst several cultivators in various parts of Britain. The samples sown in Scotland were completely destroyed by rust in the ears during the first season of their growth, that not one seed could be saved capable of vegetating, and thus the variety was lost for that time. Its liability to be so much affected by rust might be supposed to argue a tenderness in its constitution, and consequent unfitness for this climate; but it is a well-authenticated fact, that wheats imported from the Continent are often very much affected in the same manner the first season, although afterwards they become as hardy, and free from that disease, as our common winter sorts. Ear very similar to the White Bearded Tuscany; grain white, slightly transparent, a little

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elongated, and well filled, forming an excellent sample. Our Mr. Lawson, when in Russia (summer 1834), procured a small sample of this sort from Professor Fischer, St. Petersburgh, under the name of Kalmyntha, or Chinese Wheat, which was grown in our Experimental Grounds; it was, however, much injured by rust. The variety appears well adapted for spring sowing.

67 **67. Spring, Common Bearded.**—This variety is also well adapted for spring sowing. The ear is short, and grain small. It was at one time the most extensively cultivated wheat in France.

68 **68. Spring, Common White Beardless.**—Grain short, plump, and of a dull yellow or brownish colour. This variety is cultivated as a spring wheat in the central districts of France to as great an extent as any of the winter sorts; but, in general, it is much mixed with the Common White Bearded Spring of that country.

69 **69. Spring, Fellemberg White.**—Ear very white; grain small, slightly elongated, of a clear transparent reddish colour, very hard or flinty. This seems a very vigorous growing wheat; but, owing to the smallness and hardness of its seeds, and its great liability to shake when ripe, its cultivation is by no means extensive.

70 **70. Spring, Hard.**—This sort is merely a sub-variety of the foregoing; and, like it, also procured originally from the neighbourhood of Fellemberg. It differs, however, in having less flinty grains and stronger chaff, on which account it is not so easily shaken by the wind. Suitable for spring sowing.

71 **71. Spring, Small Square.**—Ear about an inch and a half in length by three quarters of an inch in breadth; more square or less compressed than that of the Chili; of a brownish-red colour, and, together with the straw, stiff and upright in habit of growth, small in size, slightly elongated, and well filled; forming a pretty sample, not unlike that of Red Dantzic.

72 **72. Talavera.**—*This variety was originally introduced from Spain into the south of England, and from thence into France, about 1814 or 1816. Some years

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since it was a good deal cultivated in the Lothians and other wheat districts of Scotland. At present, an opinion is prevalent amongst farmers that it is too tender to withstand the ungenial weather so frequent in this country during the spring months, and that it does not tiller freely. Its cultivation has, therefore, been, in a considerable degree, abandoned. Straw about an average length; ear long, thin, tapering to the extremity, and upright; grain very large, and of a whitish semi-transparent colour In our experiments we found it to ripen about a week earlier than any of the common winter wheats; from which circumstance it might be advantageously sown as a spring wheat. At present there is scarcely a genuine unmixed sample of this sort to be procured; but it might repay the trouble and attention requisite in raising it unmixed.

73. Talavera, Bellevue.—The young plants are hardy, and produce remarkably broad upright foliage, which is often of a yellowish or somewhat sickly hue in spring, but recovers rapidly afterwards; straw rather short and flexible, but becoming brittle when over-ripe; ear of a loose open habit, long, and tapering upwards; grain unusually large, oblong, thin skinned, and very white, forming a superior sample. It is decidedly the earliest beardless variety presently cultivated in this country, and, consequently, well adapted for spring sowing. Some cultivators, however, who have chiefly grown it as a winter wheat, assert that it is deficient, both in produce of straw and grain, to the more common sorts, and that it is only as a spring wheat that it is entitled to attention, or as a winter wheat on high lands; while one eminent East Lothian farmer pronounces it to be the most unprofitable sort he ever cultivated. 73

74. Touzelle.—Ear rather more compact than the Naples. When very ripe the grains are apt to be shaken out by the least wind. Grain of a brownish-yellow colour, but said to be much whiter when grown in Provence, and other parts of the south of France. A very tender sort, and not fitted for cultivation in this country. 74

75. Tremois Black-Jointed White-Bearded.—This variety has strong broad foliage, and the young plants tiller remarkably in spring; its straw is of medium 75

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T. SATIVUM. White.

length, thick, but soft and brittle when ripe, generally a good deal kneed or bent at the large blackish joints; ear of ordinary size and pretty compact; grain of medium size, oblong shape, and whitish colour; forming a fair sample. In Perthshire it has proved to be fully as late as the common winter wheats; and, on the whole, does not seem possessed of any properties to recommend it for cultivation in this country.

76 **76. Tunstall.**—Several varieties have been grown under this name in different parts, including even the White Woolly-Eared or Hedge Wheat; and one was brought into notice by Sir Francis A. M'Kenzie, Bart. of Gairloch, at the Highland and Agricultural Society of Scotland's Show at Inverness, in 1839, under the name of Tunstall Thick-chaffed Wheat, which he recommended for cultivation in that district; but further particulars regarding it have not been received.

77 **77. Tuscany.**—This sort very much resembles the Common Bearded Spring Wheat of the French, but grows rather taller, and is a shade yellower in colour when ripe. It differs also from the Bearded Tuscany in being smaller, and less compact in the ear, and also in its grain, which is smaller, flinty, and of a light reddish colour.

78 **78. Tuscany, Bearded.**—The appearance of the ear differs little from that of the Shanry, except in having rather longer awns; grain longer, plumper, and of a very light colour; it is also earlier, and better adapted for spring sowing. Discovered by Mr. A. Gorrie, who selected it some years since from a quantity of Leghorn wheat.

79 **79. Tuscany, Beardless.**—Grain light coloured, clear, transparent, and thin skinned, forming a good sample, and seems to be very prolific. Discovered, also, by Mr A. Gorrie, who picked it some years ago in a field of Leghorn wheat, the seed of which was imported direct from Leghorn.

80 **80. Uxbridge.**—*Is so named from being originally from the neighbourhood of Uxbridge, in the county of Middlesex. Ear large, and very compact, tapering very little towards the point, and hanging a good deal to one side.

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Grain rather small, short, plump, and of a very white colour, forming altogether a beautiful sample, and is much esteemed by the London millers, by whom it is preferred to any other variety. From the trials which have been made of the Uxbridge wheat in Scotland, it appears to be perfectly suited to our climate, very prolific, and deserving of attention from cultivators. It may be considered two or three days later in ripening than the Mungoswells.

81. Velvet, or Woolly-Eared.—* Also known in Sussex and Kent, where it is much cultivated, by the names of Hoary, White, and Stuffed Wheats; also by the name of Hedge Wheat (*Blé de Haie*, Fr.); but the latter is also applied to other varieties. Straw short, ear small, but close and compact; grain middle-sized, well formed, of a semi-transparent whitish colour. This is a favourite variety with the London millers, on account of its yielding little bran and a fine white flour. In Scotland, its cultivation, although extending, has never been general, from an opinion being prevalent amongst growers, that its woolly chaff is apt to retain the moisture in damp seasons, thereby materially injuring the sample, by discolouring it, and causing it to sprout. It was introduced into France from the south of England upwards of twenty years since, and is now cultivated pretty extensively in that country. 81

82. Velvet, Le Couteur's.—A sample of white downy wheat, to which we have applied this name, was received from Col. Le C.; which, having been sown along with the Common White Woolly Wheat for comparison, was found to produce shorter straw, with smaller ears, and otherwise to appear quite distinct, but seemingly inferior, both in quality and produce, to that variety. 82

83. Victoria.—This variety was found by Humboldt in the neighbourhood of Victoria, in the province of Caraccas. It generally ripened in from seventy to seventy-five days from the sowing. It was introduced into this country by Dr. Hamilton of Plymouth in 1833. Straw rather shorter than that of common wheats; ear also short, but pretty compact, whitish coloured; grain long, reddish coloured, slightly corned and flinty, rather small in size. 83

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T. Sativum. White.

84 **84. Vilmorin's.**—Straw long and thick, but not firm in texture, consequently liable to get lodged in very rich soils; ear very long, compact, and generally curved or waved; grain short or roundish shaped, and of a light cream colour; forming a very fine sample This seemingly superior variety was communicated by Col. Le Couteur, in 1839, who had it originally from M. Vilmorin of Paris, in compliment to whom he has named it; which name is here retained in consequence of its appearing quite distinct from any of the numerous named sorts which have at different times been received by us from M. Vilmorin. From the limited trials which have been made of it in this country it appears well deserving of further attention.

85 **85. Wellington.**—This variety was received by us from Wickham in Suffolk; but there is not the slightest difference between it and the variety known as Whittington, which see.

86 **86. Whitworth.**—Straw of medium length, slender and firm; grain oblong, tapering towards the point, white and thin skinned; forming a superior sample. In the county of Durham and neighbouring districts, this variety has been a good deal sought after of late years for spring sowing, it being about a week or ten days earlier than the common sorts. It was first introduced to these parts by Mr. Gilbert Wood, of Whitworth, who received it from the south of England without a name.

87 **87. Whittington.**—Young plants bushy and hardy; straw very long and of softish texture; ear unusually large and drooping; grain large, oblong, thin skinned, and forming a very superior sample. This well-known and highly prolific variety is named after Mr. Whittington of Whitmore House, near Ripley, and is the produce of three ears received by him from Switzerland in 1830. In 1836, he first offered a limited quantity of its seed for sale, since which its cultivation has spread rapidly in the different wheat districts of England and Scotland. In the latter country, it has of late, however, somewhat fallen in the estimation of growers, being liable to lodge on rich soils, where its culture has been attempted by many, contrary to the advice of its originator, who recommends it for thin or

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inferior soils only, for which it is particularly suitable. It has also been found to succeed well as a spring wheat, being fully earlier than the commoner sorts.

88

88. Winter, Common White.—This is a name given to whatever white wheat is generally cultivated in any district where its culture may not have been superseded by one or more of the superior and less mixed varieties. It is not strictly applicable to any one distinct variety, but rather to an almost infinite number of varieties of white wheats, not even excluding the velvet-eared, and some of the bearded sorts. Its cultivation is now, however, giving place to varieties less mixed, and which produce superior samples. The specimen in the Collection is the Common White Winter Wheat of the Lothians.

89

89. Winter, Common Bearded.—This variety is scarcely to be met with in cultivation. It may, however, often be seen mixed, in small quantities, with Common White Winter Wheat; grain small, elongated, of a light reddish colour, rather hard and flinty. A comparatively worthless variety.

90

90. Woolly-Eared White Bearded.—Differs from the Shanry, in having its ears covered by a fine wool or down. Introduced by Mr A. Gorrie. There are, doubtless, many sub-varieties of this as well as of the other downy or woolly wheats, possessing various degrees of merit; but as cultivators seem to have a prejudice against woolly wheats in general, the varieties are, practically, little known.

91

91. Winter, Yellow Bearded.—Ear compressed; beard long and spreading; grain medium sized, reddish-yellow in colour. This wheat was formerly very much cultivated in France; but, as agricultural improvement advances, it seems to give place to the white beardless varieties. It is, nevertheless, hardy and productive, and still cultivated pretty extensively in the province of Ardeche. It is, also, according to M. Creuze-Delessor, the principal wheat in the department of Vienna, where it is much esteemed, both by millers and bakers.

92

92. Yellow Chaff.—Straw of medium length, slender, and firm; chaff of a yellowish colour; spikelets close set on the ear, which is of medium length; grain medium in size, oblong, white, and thin skinned, forming a superior sample.

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T. SATIVUM.

Red varieties.

RED VARIETIES.

93 **93. Aitkinson's Bearded.**—Ear rather long and slightly bearded; grain dull red, with white chaff; straw very strong.

94 **94. Australian.**—Ear of medium length, having a flattened appearance; grain dull red and tapering; straw of medium length, with black joints, at an unusually short distance apart. This variety was introduced from South Australia, where it has long been a favourite.

95 **95. Beardless.**—Ear of medium length; grain medium in size, and bright red. A fine sample, and prolific sort.

96 **96. Belgian.**—*Ear of medium length; grain medium in size and bright red, forming a fine sample. A very prolific wheat.

97 **97. Blood-red.**—*Straw long, rather stout, and not apt to become lodged. Ear large, of rather a bright brownish-red colour, tapering very slightly to the point; grain medium sized, of a dark yellowish or copper colour, especially at the thickest end; the other being generally darker, and more transparent; slightly triangular, or cornered on the sides. This sort was introduced some years ago into East Lothian from the London market, and its cultivation has now extended over most of the wheat districts of Scotland. It is very prolific; but, like the rest of the red wheats, less esteemed than the white sorts,—millers and bakers not giving so much per quarter for it by two or three shillings; they, however, find it often very convenient to mix its flour with that of the white kinds, in the proportion of a fourth part, or so.

98 **98. Bois-Hall.**—Young plants very hardy; straw rather short, stout, and rigid; ear erect, usually about two and a-half inches long, very compact, or closely imbricated, especially toward the point; chaff thin and hard, of a bright reddish-brown colour, slightly streaked; grain of medium size, forming a good lightish-red sample. We received this variety from Messrs Field & Child, seedsmen, London, who had it from the original grower, Mr. Smoothy of Bois-Hall. The result of our own experiments, confirmed by those of several of our most intelli-

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gent farmers, prove that this variety is quite hardy, rather more than ordinarily prolific, and well suited for rich alluvial soils, as it is not apt to get lodged; but it is rather liable to sport or degenerate into sub-varieties, which will prove an obstruction to the extension of its culture.

99

99. Branching Smooth-Eared.—An ear of this sort was received in spring 1840 from M. Vilmorin and Co., Paris, which may be described as bearing the same relation to the beardless varieties of *T. sativum*, that the Egyptian wheat does to the downy-eared sorts of *T. turgidum*. Several grains from this ear were carefully sown in our Experimental Grounds, the produce of which possessed very little of the branching habits of the original; but whether this arose from a liability to degenerate, or was the effect of spring sowing, and a want of sufficient vigour in the plants, still remains to be ascertained. At best, however, this is likely to be regarded more as a singular variety than for any real merits.

100

100. Britannia.—Very similar, in all its characteristics, to the Belgian.

101

101. Burwell.—Straw long, firm, and reddish coloured; ear large and thin set, having scarcely three spikelets in the inch; chaff of a dark reddish-brown colour, large, hard, and closely surrounding the grain, which is also large, longish shaped, and of a deep reddish colour, forming a fair sample. This variety originated in the parish of Burwell, Cambridgeshire, a district famed for its red seed wheat, and is still held in considerable esteem by growers in the higher wheat districts of the central and northern counties of England; where, in many parts, it has entirely superseded the Old Red Wheat, from its being considerably hardier and much earlier, as well as more prolific, and less liable to suffer damage in adverse seasons.

102

102. Cambridge Brown.—Straw of medium length, slender, tough, and flexible; ear long, open, loose, and generally bent or drooping; chaff large, rigid, and of a reddish brown colour; grain deep brown, large, oblong, and tapering towards the point; forming a good sample. This variety was received in 1836 from the late Mr. George Baker, of Elmese Hall, Durham, whose crop of it that season averaged sixty bushels per imperial acre; and he further characterized it as being

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T. SATIVUM. Red.

early, hardy, and a sort which he always found to tiller or spread well in spring.

103 **103. Canadian Square.**—Very similar, in all its characteristics, to Piper's, but with the ear tapering towards the point.

104 **104. Caucasian.**—Ear dull red, long, and upright; chaff thick and hard; grain elongate, semi-transparent, rather above the medium size, hard, and flinty. This is one of the earliest red winter wheats; and is in France sometimes sown as a spring wheat. The sample is very inferior, and seemingly not deserving of cultivation.

105 **105. Champion.**—Ear of medium length; grain rather large, but a little coarse; straw strong. It is very prolific, and tillers well.

106 **106. Chinese.**—This variety resembles the Small Sicilian White Spring variety in all its parts, except the colour of its chaff and grain, which is dark reddish.

107 **107. Clover's Red.**—*Young plants of vigorous growth, hardy, and tiller well in spring; straw rather long, very thick and stout, not being liable to lodge, even when grown on rich soils; ear very large, pretty close set, and generally only slightly bent to the one side; chaff firm and strong, of a bright brownish colour; grain large, oblong, and lightish red coloured, forming a very good sample. This variety was originally selected by Mr. John Clover, farmer, near Newmarket, from a field of wheat in that neighbourhood, which was known by the name of Suffolk Red; and its culture is now very general in that and surrounding counties, where it is even displacing the Burwell, for which it is often substituted by the seed growers of that long esteemed sort.

108 **108. Common French.**—Ear pale red; grain reddish, rather hard or flinty; and of medium size. We are indebted for this variety to the French, by whom it was introduced from the north of Germany. It has not received a very extensive share of cultivation, neither does it seem deserving of such.

109 **109. Copdock.**—Ear of medium length; grain medium, both in size and colour, yielding well, but not equal to Clover's Red in fineness.

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T. SATIVUM. Red.

110. Fern.—*Ear very long (about six inches), compressed, of a light-reddish colour; grain elongated, and of a bright light red, rather flinty. This variety was introduced into the Carse of Gowrie in 1829, by Mr. James Ross, then farmer at Moorhall, who procured it from a corn-factor at Mark-lane. A series of carefully conducted experiments prove its value as a spring wheat; for although sown late in March, it has always been found to ripen as early as any of the winter wheats, sown in October or November previously. It requires, however, to be carefully pickled before sowing, being very liable to smut, and should not be allowed to stand till over ripe, being very apt to shake. This variety is, also, pretty generally known as April Wheat. 110

111. Golden Acre.—Ear medium and tapering, with a few scattered awns; chaff reddish brown and striped; grain roundish, forming a fair sample, This may be called a very prolific variety. 111

112. Golden Drop.—*Very similar to that of the Blood Red; straw shorter, and requiring a few days longer to arrive at maturity; grain about the same size, but more uniform and lighter in colour; also rather more elongated and rounded on the edges. It is, however, no better liked by the miller. 112

113. Golden Drop Purple-Stalked.—Ear darker in colour, and more compact than that of the last; straw also of a dark purple, particularly a few days before ripening; grain rather brighter in colour; in other respects similar. Introduced in 1834 by Mr. A. Gorrie of Annat. This variety seems deserving of cultivation. 113

114. Golden Red.—This differs from Blood Red, by the ear being less compact, longer, and more tapering towards the point; and in its grain being longer, not so round and compact, and more obtusely angled on the sides. It is, also, very hardy, prolific, and much esteemed. This variety is sometimes called Red Essex. 114

115. Harvey's Prolific.—Ear of medium length; grain medium in size and colour, forming a fair sample, and yielding well. 115

116. Hickling's Prolific.—Straw of fully more than ordinary length, strong, and not liable to lodge; ear of a large size and beautiful dense square form; 116

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T. SATIVUM
Red.

chaff white; grain of a short or somewhat roundish form, and a deep yellow or reddish colour, forming rather an inferior sample. Young plants tiller well in spring, and yield a broad healthy foliage. This variety is the produce of a plant with three ears, which was discovered, in 1830, by Mr. Samuel Hickling, in a field at Cawston, near Aylsham, Norfolk; these contained 293 grains, from the produce of which he, in 1835, sowed a breadth of 18 acres. It was introduced into the Lothians in the following year, and resulted in a rapidly extended cultivation in the various wheat districts of Scotland, as well as in England and Ireland. Its culture is now, however, considerably on the decrease, from the circumstance of dealers offering only a secondary price for it, as they consider it inferior for baking to most of the older red wheats, amongst which it is generally classed, notwithstanding the whiteness of its straw and chaff. Samples of wheat, under the names of King William, Thick-set, Incledon's Prolific, Courtney's Six-rowed Chevalier, Norfolk, &c., have been at different times received from various parts of England, between which and Hickling's no difference apparently exists, except such as may be attributed to the difference of climate, soil, &c., in which they had been grown.

117 **117. Kent.**—Ear resembling that of Golden Red, but the grain much larger, of a more uniform and darker colour, and also more transparent, hard, and flinty.

118 **118. Kessingland.**—Ear large, and of medium length; grain large, and darkish yellow, thick-skinned, but very prolific.

119 **119. Lammas, Red.**—*Form of the ears more waved than in those of Red Kent, also thinner, and not so much reclined or bent to the side. This variety originally from England, has been cultivated in the north of France with a considerable degree of success; but although taken from a northern to a southern latitude, it is found less adapted for withstanding the winter in the neighbourhood of Paris than the Common or Old Red. This can only be accounted for by the winter in that part of France being generally colder than in England. The French consider this sort as yielding the finest sample of any of their red wheats. It is, however, liable to be shaken when fully ripe, and

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T. SATIVUM. Red.

should, therefore, be cut a day or two before arriving at full maturity. In the quality of its sample, this variety very much resembles that of the Kent, to which it also bears a marked resemblance in its general character; so that they are very probably of the same origin, and owe any distinction more to the effect of a difference in climate, soil, or culture, than to anything else. The Lammas is certainly the most esteemed variety of the red wheats cultivated in Scotland.

120

120. Marianapoli.—Straw tough, firm, and erect; ear of medium length, thin and slender; chaff thickish and firm, bright brownish coloured, and furnished, towards the point of the ear, with a few scattered awns, from one-fourth to three-fourths of an inch in length; grain rather under the medium size, oblong, thin skinned, and of a bright reddish colour; forming a superior sample, compared with most other red spring wheats. This variety was obtained in 1839 from M. Vilmorin, Paris, who received it from the department of Vaucluse, as being an early and deserving winter sort; but from trials made by him, he is of opinion that it will answer better as a spring wheat in the north of France. The samples sown with the others in our Collection stood the winter well, appeared less liable to disease, and ripened as early as the generality of the spring varieties; but seemed very deficient, both in produce of straw and grain.

121

121. Marigold.—Ear of medium length; grain of medium size, and bright red; forming a good sample. It is a very prolific variety.

122

122. Mendoza.—A bearded wheat, introduced from Mendoza by Sir John Sinclair, Bart. This sort bears a considerable resemblance to the Fern; but has stronger chaff, with larger and coarser grain.

123

123. Mouse-tail, White-Stalked.—So named from its having a long thin tapering-pointed ear. Grain elongated, of a brownish yellow colour, irregularly interspersed with dark semi-transparent spots or blotches. Seems rather unproductive, and not deserving of cultivation.

124

124. Mouse-Tail, Red-Stalked.—Distinguished from the last by having purple coloured straw, and darker red ears; grain also darker in colour. Appears, also, an inferior sort.

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T. SATIVUM. Red.

125 **125. Narbonne Bearded.**—Straw short and tough; ear long and thin; chaff large and firm, of a dark brown colour at the sides, and lighter towards the centre of each spikelet; awns brownish, long, and spreading; grain of medium size, long shaped, and forming a dark coloured inferior sample. This sort appears to be rather subject to disease, and possessed of no property to entitle it to culture in this country.

126 **126. Old Red, or Common.**—This bears a close resemblance to the Common French. Ear of medium size, nearly upright; grain elongated, and of a dull reddish colour. It is still cultivated to a pretty considerable extent, on very strong clay or tenacious soils, in the north of France; but in this country it is almost entirely superseded by some of the more prolific and superior varieties, particularly the Blood Red.

127 **127. Piper's Thickset.**—*Ear square and compact, bearded; chaff dull red; grain roundish and light red, forming a very fair sample.

128 **128. Rattling Jack.**—Ear of medium length; grain medium, dull yellowish. A coarse sample, but a very prolific sort.

129 **129. Sark Yellow.**—Straw rather short, but tough and firm; ear brownish coloured, slender, and slightly curved; grain of a thin oblong form, and dull yellowish colour. Col. Le Couteur, Jersey, from whom this variety was received, first obtained it from the Island of Sark, which, he reports, as much visited by storms, and where the fields receive artificial shelter; he consequently presumes that it may be advantageously grown in cold and late districts. The result of our experiments tends to shew that hardiness is its only property, as it is neither prolific, nor does it yield a good sample.

130 **130. Saumur Yellow.**—Straw tall, erect, thickish, somewhat soft, and, as well as the chaff, of a whitish colour; ear large, and medium compact; grain large, oblong, thinnish skinned, and light red or yellowish coloured, forming a good sample. This variety is said to have originated in the valleys of Anjou; and its culture has, of late, increased rapidly in the district of Orleans, La Beauce, in the vicinity of Paris, and other parts of France, from having been found fully

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T. SATIVUM. Red.

a week earlier, as well as more prolific, than the commoner sorts; but unusually severe springs prove it to be also more tender. Small quantities grown in this country shew it to be a healthy and free grower; but seemingly possessed of no qualities to recommend it in preference to the sorts in general cultivation.

131

131. Sicilian Square.—Evidently the same as Piper's.

132

132. Spring, Early.—Ear long and bearded; grain of medium size and semi-transparent, of a dull red colour; straw of medium length, and rather darkish. An excellent variety, and well adapted for a spring wheat, although somewhat liable to shake if allowed to become fully ripe.

133

133. Sulphur-coloured.—Ear somewhat compact; grain short, rather plump, and of a yellow sulphur-like colour. May be considered a prolific good sort.

134

134. Spalding's Prolific.—*Now a well-known and very prolific variety, introduced many years ago from Norfolk; very hardy, and of vigorous growth; straw rather long and stout, and not liable to lodge; ear large, and close set; grain large, oblong, and forming a good average sample amongst the range of Red Wheats.

135

135. Touzelle.—Ear longish and rather thin, of a dark reddish colour, with large firm chaff, and large well-filled, thin-skinned, reddish grain. This variety was received from M. Vilmorin, Paris.

136

136. Transparent.—A bearded variety, well adapted for spring sowing. Straw longer than that of most spring wheats, firm and flexible; ear long and very slender; chaff of a transparent lightish brown colour, large and hard; grain largish sized, somewhat hard or flinty, and of a transparent reddish or yellow colour, forming a medium sample. Compared with the other French spring wheats, this seems to yield a larger crop of straw, and is also a more hardy and free grower; but its produce in grain is too scanty to render it worthy of attention.

137

137. Tuscany.—Ear of a darkish red or brown colour, large, rather compact, bending to one side, bearing a considerable resemblance to the Blood-Red, than which its grain is larger, more pointed, and of a more uniform yellowish-brown colour; it is also eight or ten days earlier in ripening. It seems to merit

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T. SATIVUM. Red.

cultivation, and, as well as the White Tuscany, ripens almost as early, when sown in March, as if sown in autumn.

138 **138. Velvet or Woolly-Eared.**—Ear short and compact; grain slightly elongated, dark red, and flinty. Medium prolific; but, like the White Velvet-Eared variety, little esteemed, from its woolly ears being supposed to retain the moisture in damp weather.

139 **139. Velvet or Woolly-Eared Bearded.**—Ear long, downy, and rather compact, of a dark reddish colour; grain large, flinty, and rather coarse; chaff hard, and not allowing the seeds to be easily shaken by the wind. A prolific, early, and hardy winter wheat, and might, probably, be found suitable as a spring wheat.

140 **140. Velvet or Woolly-Eared of Crete.**—Ear deep red, downy, short, and compact; grain short and slightly angular, of a reddish opaque yellow colour. Sample of rather a superior quality.

141 **141. Victoria Red Spring.**—Ear long and bright red, with long beard; grain of medium size, and forming a fair sample. This is a very prolific variety.

142 **142. Waterloo.**—This variety produces a strongish straw, yields a good sample, and is of medium prolificness, bearing a considerable resemblance to the Burwell; but does not seem possessed of sufficient properties to induce growers to cultivate it in preference to the more generally known kinds.

T. TURGIDUM. Turgid Wheats.

IIº. TRITICUM TURGIDUM.

Turgid Wheats.

The Turgid Wheats are generally hardy, vigorous, and very productive; having long, hard, and often almost solid straw, so coarse in quality as to be disliked by cattle; where, however, straw thatch is reckoned an article of importance, no sort could be cultivated to more advantage, provided the soil and climate are suitable. The ear is always bearded; but in some of the varieties the beards or awns are easily detached by winds when fully ripe, which gives them a beardless appearance. The soils best adapted for the growth of the Turgid wheats

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T. TURGIDUM. Turgid.

are those of a strong rich clay or tenacious nature, and such as the Common wheats are apt to become lodged in; the strong straw of the Turgid wheats, notwithstanding the heaviness of their ears, being fully capable of standing under any ordinary circumstances. They may all be said to belong to the latest class of winter wheats, and, therefore, are only adapted for earlier climates. With all these qualities and defects, the Turgid wheats are not cultivated to any great extent in Britain.

143. African. – Straw very long, stout, and nearly solid; ear long and more open than is usual in the varieties of this species; chaff hard, slightly downy, dark brown on the margin, and shaded off to a light yellowish colour inwards; grain medium sized, yellowish, and somewhat transparent, of a short and irregular roundish shape. This variety was received from M. Vilmorin, Paris; but, like others of the same species, there is little probability of its ever being grown with advantage in Scotland. 143

144. American Thumb.—This resembles the Egyptian, in having a large compound head or ear, with very long and very thick solid straw, but differs in having white woolly chaff and lighter-coloured grain. An ear, received in 1838, from Mr. William Courtney, Newington-Stacey, Hants, contained 13 branches; and he reports his crop to have yielded at the rate of one hundred bushels per acre. Very flattering accounts of this variety have appeared in various agricultural periodicals; but, like the Egyptian, to which it is closely allied, it yields a coarse and inferior sample, and is only suited for latitudes such as the south of Europe. 144

145. Chinese.—Ear white, large, and very compact, square, and slighty pendulous; awns liable to be broken off by wind when ripe; grain rather large and flinty. This variety was obtained in 1834 at Petersburgh, by our Mr. Lawson, under the name of *Doragana*. 145

146. Common Rivet.—Ear smaller and less compact than that of the Cone Rivet; awns more adhesive when ripe; and grain longer and more flinty. This sort requires still longer to arrive at maturity than the Cone Rivet, on which 146

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T. TURGIDUM.

Turgid.

account it may be deemed unfit for the climate of Scotland. In the south of England it is cultivated on the strongest clay soils.

147 **147. Cone Rivet.**—Ear very white and velvety, about four inches long and three quarters of an inch in diameter at the base, tapering towards the point, square, very regular and compact; awns strait, about as long as the ears, placed in four straight rows, on the angles of the ear, with two rows of shorter awns arising from the outer chaff of the middle grain in each spikelet. These short awns lie close upon the ear, not spreading as the larger ones. The ears become pendulous as they approach maturity, and contain on an average about seventy grains. The awns are generally broken off when ripe, particularly if the weather should happen to be windy, so that the whole assumes the appearance of beardless wheat; grain a little compressed and wrinkled, whitish yellow, soft, and considerably larger than that of common wheat. Sample inferior, and not well liked by bakers; straw long, strong, and hollow; requiring nearly a fortnight longer to ripen than the common varieties of *T. sativum*. It is found to answer best in strong clay soils, and although a vigorous grower, it yields a scanty supply of foliage, and is thought to be rather an impoverishing crop. On favourable soils, it often yields several bolls per acre more than the common sorts, and is certainly one of the most beautiful wheats, when growing, which can well be imagined. Some years since, when the wheat-fly was so destructive, this variety was found to be scarcely affected by it; hence it has received the name of Antifly.

148 **148. Cone Rivet, Red, Grey, or Blue.**—General appearance of the ear (except the colour, which is a reddish blue or ash) the same as in Cone Rivet, compared with which its grains are also darker in colour, and rather more flinty. Cultivated in England and the north of France, on strong clay and rich soils. It requires about the same time to ripen as Giant St. Helena.

149 **149. Egyptian.**—Ear slightly woolly; grain short, whitish-brown, and rather flinty; straw stiff and long, nearly solid, or filled with pith. This is sometimes known by the name of Abyssinian Wheat. It is generally allowed to constitute

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T. TURGIDUM. Turgid.

a distinct genus, botanists placing the distinguishing characteristics on the compound form of the ear, which is caused by the lower florets becoming elongated, and forming so as to make the whole resemble several ears tied together, or a compound spike. This compound form is, however, by no means permanent, and when the ear assumes a simple form, it is not to be distinguished from the Turgid wheats. It has often been introduced into several parts of Scotland, under different names, and has received sufficient attention; but its general produce and quality does not warrant its cultivation in this country. It is, however, partially cultivated in the southern parts of England and France.

150

150. Garagnon Black Bearded.—Straw long, very thick, stout, and nearly solid; chaff large, rigid, smooth and white, forming a striking contrast with the long black awns; grain very large, lightish coloured, and of an oblong irregular shape.

151

151. Lozere.—Ear shorter than in the smooth Taganrock, not so close, and less regular; grain whitish-yellow, thin skinned, and of excellent quality. This variety is much cultivated about Lozere, where it is often used, boiled or baked, in the same manner as rice.

152

152. Smooth White Mongoke.—Ear very large, white, and square, or somewhat of a cylindrical form; awns long, straight, and rigid; grain long, irregularly shaped, large, white, and thick skinned; straw very long, and nearly solid.

153

153. Petanielle, Black.—Amongst all the varieties of *T. turgidum*, this is most conspicuous for the dark colour of its ears and awns; the height of its straw, and the size and abundance of its grain, which is, however, very coarse. The awns fall off when ripe.

154

154. Pole Rivet.—Ear of a lightish-brown colour, more compressed and irregularly shaped than the Common Rivet; grain long, reddish, and flinty; awns falling off when ripe. This variety is very late, and only grown on strong soils in England. It seems the same with that known to the French under the name of *Polard rouge bleu, Gros blé rouge*, &c., which is much cultivated in the southern and eastern departments of France.

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T. TURGIDUM. Turgid.

155 **155. St. Helena, Giant.**—This variety was first introduced to France from St. Helena, and, latterly, from the Baltic, under the name of *Blé de Dantzic* (certainly not the Common Dantzic Wheat), so that it probably might have been originally imported from thence to St. Helena. Ear larger and more irregularly formed than those of the other varieties; grain very large (in length about 3½ to the inch), and flinty, similar in quality, bnt more prolific than the Turkey. A late sort. Esteemed one of the best for the richer soils of the middle and south of France; and in this country it appears to ripen rather earlier, and produces a better sample than most others belonging to this species. Some years since, a reputed superior Turgid wheat was brought under the notice of French cultivators by a M. Baraud of Louisiana, under the name of *Blé Nonette de Lausanne*, which was found to be the same as the Giant St. Helena.

156 **156. Smooth Red.**—Ear long, square, and compact, of a dull reddish colour; grain reddish, slightly compressed on the sides, or angular, soft, and of medium quality. Very much cultivated in the central districts of France. This variety is known also as Large Red, or Red Upright Wheat of Gatinais.

157 **157. Taganrock Black Bearded.**—This variety resembles the Garagnon in having long black awns, and smooth white chaff, but its ears are much shorter and more compact; chaff larger and harder or firmer in texture, and its grains are still larger, and of a more oblong shape.

158 **158. Taganrock Smooth White.**—Ear scarcely so long as the Mongoke, and a shade darker in colour; straw shorter, softer, and hollower; grain smaller than in most of the Turgid wheats, and more regularly formed, of a yellowish-brown colour, seldom transparent or flinty. This is one of the earliest, as well as one of the most esteemed Turgid wheats.

159 **159. Turkey.**—This seems a sub-variety of the Pole Rivet; ear larger, thicker, and more regularly square, of a reddish ash colour, with larger and darker coloured grain; sample rather coarse.

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T. DURUM. Hard.

3° TRITICUM DURUM.

HARD OR HORNY WHEAT.

This name is applied to a class of wheats which are easily distinguished by their long shaped, hard, and flinty, or horny grains; large broad compressed ears; elongated spikelets, and large hard-like shining chaff. They are all awned or bearded, have stiff, short, upright straw, broad foliage, and the ears are in general very short in proportion to their breadth. The hard wheats are very early, and may be sown in spring; their cultivation has been several times attempted in Britain, but with little success, owing, partly, no doubt, to the unsuitableness of our climate, and partly to their peculiar hardness, and, in the estimation of our bakers, inferiority of the grain. The chief range of their cultivation lies along the shores and in the islands of the Mediterranean, and along the shores of the Levant, as also in Arabia, Persia, and some parts of India. The Arabs cook some of them in the same manner as they do rice, which they all resemble in the hardness of their grain. Wheats of this sort are often imported for the London markets, but were at first very much disliked by millers, from the ordinary millstones being unsuitable for grinding.

160

160. Georgian.—Ear about two inches long, by from one-half to three-sixths of an inch in breadth, subcylindrical, compact, and a little irregular towards the base; awns about twice as long as the ear; grain about one-third of an inch in length, by less than one-sixth in diameter at the middle, slightly triangular, and curved towards the ends, light red, very hard and flinty, or horny. Straw short, upright, and quite solid.

161

161. Ishmael.—Straw short, rigid, and solid; ear erect, densely square, short and thick; chaff long, whitish coloured, and slightly downy; awns, or beards, blackish, or dark brown towards the base, long and spreading; grain large, oblong, and of a light yellowish transparent colour. This sort was received, in 1839, from M. Vilmorin & Co., Paris, and is easily distinguished by its very dark coloured grains. It is one of those sorts which are cultivated extensively

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T. DURUM. Hard.

in the north of Africa; but although early, and suited for spring sowing, it is not likely ever to be considered worthy of culture in countries adapted for the more valuable varieties of *T. sativum*.

162 **162. Manfridonia.**—Straw short, rigid, and generally quite solid; ear erect, square, and pretty compact; chaff lightish brown, hard, and smooth; awns long and similar in colour with the chaff; grain large, oblong, hard, or flinty, and of a light yellow transparent colour. This variety approaches in character to the Sicilian, but may be considered as a still more decided variety of *T. durum* Its flour is used for making macaroni in Italy.

163 **163. Morocco, or Tangier.**—Ear larger and more irregularly shaped than in any of the other hard wheats; grain larger, same colour, and equally hard; straw hard and upright, but generally hollow. This sort, and several more varieties in mixture, differing from it chiefly in colour, were sent to this country several years ago by the British Consul at Tangier. They were tried in our Experimental Grounds, and in several other parts; but their cultivation has been abandoned, or they are only to be met with in Collections.

164 **164. Nepaul.**—Straw short, erect, slender, and slightly hollow; ear about two and a-half inches long, and somewhat compressed; chaff regularly and densely covered with thick down, firm in texture, and of a light brown colour; awns long, erect, and blackish or dark brown; grain of more than ordinary size, oblong, very hard, and of a lightish yellow transparent colour. This sort was sent from Nepaul to the Highland and Agricultural Society of Scotland, in 1839, by Dr. Rolland, and was distributed amongst growers, in various parts of Scotland, for trial the following year, when the produce was so much affected with mildew and rust as to render these experiments almost a total failure; a circumstance not of an unusual occurrence with foreign samples the first year of their growth in this country. Subsequent experiments, which were made to test its qualities, prove it to be of comparatively little value. It is not likely to merit much attention, further than as being a variety so very distinct from the other known sorts as seemingly to constitute a different species.

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T. durum. Hard.

165. Siberica.—Ear shorter and more compact than in the Georgian, of a light brownish colour, and more distinctly downy; grain rather shorter, equally hard and flinty; straw a little hollow. 165

166. Sicilian Hard.—This variety, together with the small Sicilian, seems to form, as it were, the connecting link between the *T. sativum* and *T. durum*, the Small Sicilian bearing most resemblance to the common, and the large Sicilian to the hard sorts. Ear square or approaching to the cylindrical form, about one-third of an inch in diameter, by about three in length; beard or awns considerably longer than the ear; grain medium-sized, elongated, hard, and horny, of a lightish-red colour. 166

4° TRITICUM POLONICUM.

Triticum Polonicum.

167. Polish Wheat.—Ear long, loose, nodding to one side, and awned; awns about three times as long as the outer chaff, very brittle, and easily broken off when ripe; grain about half an inch in length, reddish, transparent, and very hard. This wheat is at once distinguished by its long loose, and chaffy-like ear, and its large grain. It is also named Polish Rye, Grecian Wheat, Wheat of Cairo, and sometimes Egyptian Wheat; but this name is more properly applied to the variety described under this name. In Morocco it is known by the name of Mogadore Wheat. It is not fitted for cultivation is this country. Although generally termed Polish Wheat, yet it appears to be rather a native of Africa, in various parts of which it is cultivated extensively. A wheat brought by our Mr. Lawson from Russia, in 1834, and which was said to be extensively cultivated in the south of Siberia, turns out to be the same as the above. 167

5° TRITICUM AMYLLEUM.

Triticum Amylleum.

STARCH WHEAT.

In the two varieties of Starch Wheat the ear is awned, compressed, and drooping; spikelets close set, with two seeds, regularly imbricated in two rows; straw hollow, and leaves velvety. The chaff is adhesive, but not so much so as

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T. amylleum. Starch.

in *T. spelta*. Hitherto, these wheats have been grown in Scotland simply for experiment. The varieties are distinguished as—

168 **168. Red Winter.**—The grain of which is red; and,

169 **169. White Winter.**—The grain of which is a lighter colour

Triticum Spelta.

6° TRITICUM SPELTA.

SPELT WHEAT.

In the Spelt Wheats the ears are long, slender, and erect; spikelets thinly placed; chaff coarse, thick, and very adhesive. There are many varieties, but, like the Starch Wheats, only grown in Scotland for experiment. Among those raised by ourselves may be enumerated the following; their names sufficiently point out their distinguishing characteristics, beyond which it is unnecessary to enter:—

170 TO 178

170. Black Winter.
171. White Winter.
172. Red Winter.
173. White Summer.
174. Red Summer.
175. Small Seeded.
176. Red Awned.
177. White Awned.
178. Black Awned.

Triticum Monococcum.

7° TRITICUM MONOCOCCUM.

179 **179. One Grained Wheat.**—Ear small and bearded, very much compressed, two-rowed, resembling barley; leaves and straw very small and rigid; grain small, triangular, transparent, but soft and mealy.

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II. SECALE.* (*Linn.*)

SECALE. Rye.

Belonging to Class Endogens, or Monocotyledons; Glumal Alliance of Lindley; Natural Order Graminaceæ; Linn. Cl. 3, *Or.* 2.

English—RYE.
French—SEIGLE.
Italian—SEGALA.
German—ROGGEN.
Dutch—ROGGE.
Spanish—CENTENO.
Russian—ROSCH.

"You sun-burnt sicklemen of August weary,
Come hither from the furrow, and be merry;
Make holy-day; your rye-straw hats put on,
And then fresh nymphs encounter every one
In country footing."

THE TEMPEST, *Act IV., Sc.* 1.

Origin of Rye.

RYE is generally supposed to be a native of Crete or Candia, but without sufficient authority, as it is never found growing wild there. Like our other cereal grains, it must remain matter of conjecture as to its native habitat. From the very early mention made in Scripture of the rye, a supposition has been founded that it is indigenous to Egypt; but it is doubtful how far the original word (*kussemuth*), denoting this grain, is correctly rendered in our authorized version, where it occurs three times. In two places (Exod. ix. 32, and Isaiah xxviii. 25), it is translated *rye*, and in the third (Ezekiel iv. 9), *fitches*. Dr. Royle says, "though it is very unlikely that kussemuth can mean rye, it is not easy to say what cultivated grain it denotes." It occurs in the same passage with all the principal kinds of grain ("take wheat, and barley, and beans, and lentils and millet, and fitches, and put them in a vessel and make bread thereof"). Although the conclusions of Dr. Royle seem to point out the species of *Triticum spelta* as the kussemuth of Scripture, he admits it to be open to further investigation.

* Supposed to be derived from *seco*, to cut, in contradistinction to the leguminous plants, or those gathered by the hand.

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SECALE.

Rye.

Where cultivated.

The culture of rye is confined to the temperate zones; but it is not successfully grown towards their equatorial limits, flourishing best in colder latitudes. Rye is the prevailing grain in a great part of the northern temperate zone, namely, in the south of Sweden and Norway, Denmark, and in all the lands bordering on the Baltic, in the north of Germany, and part of Siberia.

Ergot of Rye.

Rye is subject to a disease (*spermœdia clavis*) commonly known as *ergot*—which causes the grain to turn black. In this stage it forms an important addition to the materia medica. In the section of this Synopsis devoted to Medicinal Plants it will be found noticed in full.

Distinction between Wheat and Rye.

The chief generic distinction between wheat and rye consists in the two glumes or outer chaff of the spikelets in the latter being bristly, or awl-shaped, while those of the former are large and valved, or hollowed, so as to contain a considerable portion of the lower floret of the spikelets.

Its culture in Scotland.

The culture of this grain in Scotland has gradually decreased for some time past; but more especially since the alteration in our import duties, by which foreign straw-plait is admitted free of duty. Its value as a green food, mixed with tares, is great, and requires only to be known to be more generally followed.

180

1. **Common or Winter.**—Although, comparatively speaking, is little cultivated in Britain, yet on the Continent it is, in some parts, considered as being of the utmost importance in domestic economy. Besides forming the principal bread for the inhabitants, it is used both in the brewery and distillery; and, in many parts, after undergoing a species of bruising or coarse grinding, it is used alone, or mixed with barley, oats, beans, peas, or tares, which have undergone a similar operation, and formed into a kind of coarse bread for feeding domestic animals, particularly horses. Although its bread contains a less quantity of nutritive matter than that of wheat, it is found to keep longer, and forms almost the only bread eaten by the inhabitants of the high countries, where the soil and climate are both unsuited for the growth of wheat. It is particularly adapted for poor moorish soils in elevated places, and, indeed, for all kinds of inferior dry soils, in whatever situation. Besides being cultivated for its grain, rye is also

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grown as green spring food for cattle, either alone, or, what is still preferable, mixed with winter tares; in either case forming a valuable food for milch cows and young cattle, between the period when turnips and other roots are finished, and the cutting of grass and clover.

2. Great Northern.—Most resembles the St. John's Day, but differs from it in having much more luxurious and darker green coloured foliage, considerably taller straw, larger grain, and in being a few days earlier in ripening. A cut sample of this variety, measuring upwards of eight feet in height, was received, in 1839, from M. Vilmorin, who first obtained it from M. Molle, Professor of Agriculture, &c., under the name of *Seigle multicaule de Russie*. Another variety, introduced from Saxony to, and recommended for cultivation in, France, under the name of *Seigle multicaule*, has been proved, by frequent trials, to be scarcely, if at all, different from the St. John's Day Rye above alluded to. 181

3. Perennial.—Grain smaller than the St. John's Day. Received, in 1835, from Professor Fischer, Director of the Imperial Gardens, St. Petersburg. 182

4. St. John's Day, or Midsummer.—This variety differs very much from either of the above, being considerably later in running to ear and ripening than the Winter Rye. It also produces longer straw, much longer ears, and more root foliage. In France, and other parts, where this sort is grown, it is often sown in the end of June, and eaten down with sheep, in the autumn months and spring, until the latter end of April, when it is allowed to run to seed, and is said to yield a better crop of grain after being so treated, than if it had been cultivated in the usual manner. The great length of time between its brairding and running to seed, peculiarly fits it for being treated in this manner. Originally introduced into France from Tuscany, by M. Vilmorin, and its cultivation is rapidly increasing. Previously to 1848 it had never been cultivated, on the large scale, in Scotland. The results of the first experiment prove so strikingly the value of this variety, that we subjoin the details, as furnished by Mr. Alexander Ross, Land-steward of the late Lord Cranstoun, at Corehouse, near Lanark. 183

"On the 30th October 1848, I sowed two bushels of the St. John's Day Rye, and

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SECALE.

Rye.

" reaped it on the 29th August following. In the Autumn of the same year, I sowed " five acres of reclaimed moorland with Common Rye. In both cases the Rye was sown " under unfavourable circumstances, as no dung was applied to either of them. They, " however, got a top-dressing of Peruvian guano, applied at three different times, and " amounting to 2½ cent. per imperial acre. The guano was mixed with a liberal allowance " of sifted coal ashes, which was previously saturated with liquid manure. I have found a " slight application, and often, of guano, to have a much better effect in promoting growth " than a too liberal application at any one time. The St. John's Day Rye stood the winter " well, and, in my opinion, is a hardy variety, and superior to the common, both in pro- " duce of grain, and bulk of straw, and a freer grower.

" The latter end of last summer, I reclaimed about seven acres barren moor, by drain- " ing, subsoiling, and liming. In the Autumn, had it sown with St. John's Day Rye; and, " as a test, had a few riggs of common rye sown alongside of it. Both varieties stood " the winter well. They were sown same day, and, in every respect, were similarly treated. " The contrast, however, was very marked, the St. John's Day Rye being consider- " ably in advance of the other. A slight top-dressing of Peruvian guano harrowed in with " the seed was all the manure applied. I should state the above seven acres have an elevation of " nearly 700 feet, and an east exposure; but is, however, pretty well sheltered with rising " plantations. Three bushels per imperial acre is sufficient seed; if the land is good, less " will do. The produce, per imperial acre, of the St. John's Day Rye I found to be at the " rate of 28½ bushels, and, under more favourable circumstances, must have been consider- " ably more. Gentlemen who are reclaiming a portion of moorland annually would do well, " I think, to sow it the first year with rye, as it will at least produce straw, when scarcely " anything else will, and will greatly facilitate the decomposition of the sod, and pre- " pare the landfor turnips the year following."

184 **5. Spring.**—A sample of this sort, from M. Vilmorin and Co., Paris, sown in our Experimental Grounds beside the Common Rye, was of a more upright habit of growth from its commencement, did not tiller so well, was about twelve days earlier, shorter in straw by at least one foot, and had a shorter ear. Notwithstanding the seeming decided difference, however, it is asserted by French writers, who have repeatedly tried the experiment, that, if sown frequently under similar circumstances with Winter Rye, it acquires the same habit and appearance.

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III. HORDEUM.* (*Linn.*)

HORDEUM. Barley.

Belonging to Class Endogens, or Monocotyledons; Glumal Alliance of Lindley; Natural Order, Graminaceæ; Linn. Cl. 3, Ord. 2.

English—BARLEY.	*Italian*—ORZO.	*Danish*—BYG.
French—ORGE.	*Spanish*—CEBADA.	*Arabic*—DHOURRA.
Ger.—GERSTENGRAUPEN.	*Russian*—FATSCHMEA.	*Persian*—JUO.
Dutch—RYG, GARST.	*Swedish*—KORN, BIUGG.	*Hindoo*—JOW.

"Lo, how the arable with barley grain
Stands thick, o'ershadowed, to the thirsty hind
Transporting prospect!"—PHILLIPS.

Origin of Barley.

WE know, from the Scriptures, that barley was cultivated in Syria upwards of 3000 years ago. In the Book of Ruth, ii. 17, it is said, that "she gleaned in the field until even, and beat out that she had gleaned, and it was about an ephah of barley." Diodorus Siculus ascribes the first culture of barley to Osiris, who discovered it in a wild state. The Romans, who largely cultivated this cereal, obtained their seed from Spain, Egypt, and other parts of Africa. No record exists as to whether barley was grown in Britain before the invasion of Julius Cæsar, although it is probable that such was the case; for in their intercourse with the Phœnicians, the seed grain might have been procured in exchange for British tin. Colonel Chesney found barley growing apparently wild on the banks of the Euphrates, but it is impossible to say whether it was not the remains of cultivated grain.

Culture of barley in the north of Europe.

Barley and oats are the cereal grains whose cultivation extends farthest north in Europe. In the northern parts of Norway and Sweden, and of a part of Siberia and Scotland, they afford to the inhabitants their chief vegetable food.

* Supposed to be derived from *hordus*, heavy; because the bread made from it is very heavy.

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HORDEUM. Barley.

There are four species of barley, viz. 1. *Hordeum vulgare* (known in Scotland as bere or bigg); 2. *H. hexastichon*; 3. *H. zeocriton*; and 4. *H. distichon*.

H. vulgare.

1° HORDEUM VULGARE.

FOUR-ROWED BARLEY.

185 **1. African.**—Straw and ears much shorter than the Winter White; grain larger, thicker skinned, and not so plump; foliage, when green, remarkably broad, and greedily eaten by hares and rabbits; awns long and spreading, and not easily separated from the grain. The cultivation of this variety is now abandoned on account of its shortness of straw and inferiority of sample. Introduced to this country some years ago by the British Consul at Tangier, Morocco, and known also as Tangier or Morocco Barley.

186 **2. Bengal.**—Resembles the African, but is not so strong in the straw. Received from Mr. George Drummond, Bengal.

187 **3. Australian.**—A variety much esteemed in consequence of its early ripening.

188 **4. Common Bere, Barley, Bigg, or Rough Barley.**—Ear about two and a-half inches long, containing about sixty grains in each, which are much pointed or tapering towards both ends; awns or beard about three and a-half inches long, adhering to the grain. Cultivated chiefly in the Highlands of Scotland, and in the Lowlands on exposed inferior light soils.

189 **5. Naked.**—Ear similar in shape to the Common Bere, but rather more distinctly six-rowed, containing a much greater number of grains, which are small compared with those of the other naked* barleys; awns rather upright and easily broken when ripe. This sort is also known by the name of Siberian Barley. Notwithstanding many experiments on its first introduction, its cultivation is now almost abandoned, and, indeed, it was never extensive; but whether arising from prejudice, or from being found unsuitable to the climate, is now difficult to determine. It is still extensively grown in the north of Europe, and even

* The difference between naked and other barleys, consists in the paleæ, or husk, separating from the grain in thrashing, as in common wheats.

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H. VULGARE. Four-rowed.

in some parts of France, and certainly deserves a fair trial in this country, particularly in the north of Scotland, where it might form a valuable acquisition on account of its earliness, being ripe about a week before the Common Bere.

6. Old Scottish Four-Rowed Naked.—A variety in a great measure superseded by the Naked or Siberian; but still a favourite in many districts of Scotland. 190

7. Nepaul or Himalayan.—Straw short, except when sown late, or in late situations, stiff, and upright; foliage, when young, broad, and of a glaucous green colour. First introduced into Britain from the Himalayan Mountains (where it grows near the line of perpetual snow) in 1817, under the name of Nepaul Wheat, and said to be a new and early variety, capable of ripening two crops in one summer. It is found, however, possessed of all the characteristics of the genus *Hordeum*, and differs from the common Naked variety chiefly in the form of its awns, which are very short, about half as long as the grain, generally bent down upon the inner chaff, or covering of the grain, with the wings of the outer chaff rising to about one-eighth of an inch on each side, and forming, with the awn, a three-forked-like termination to the floret; hence the specific name *trifurcatum*. This distinguishing characteristic of the awn is, however, by no means permanent, for, on being cultivated for sometime in this country, the awns occasionally become elongated, as in the naked variety; and on the same ear is often to be seen the two extremes, long and short, with all the intermediate forms and sizes of awns.* Even in this case, however, it is easily distinguished from 191

* The peculiar deformed appearance of the awns in this variety has induced many botanists to consider it a distinct species, which Sweet named *Hordeum Nepalense*; Shultz, *H. Himalayense*; Seringe, *H. trifurcatum*, &c. We, however, consider it a variety of *H. vulgare*, from the arrangement of its florets, and the tendency it exhibits to produce perfect awns, under cultivation, in this country. In the Collection will be found specimens shewing the aptitude of the awns to become long and straight, and, also specimens exhibiting its still further transformation into a distich or two-rowed barley, with all the intermediate forms; thus tending to shew that the cultivated varieties of *Hordeum distichon* and *H. vulgare* may have originally been the offspring of the same species, although they now possess a seemingly distinct permanency of character.

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H. vulgare. Four-rowed.

the before-named variety by its larger, rounder, and darker-coloured grains. It is also rather earlier.

192 **8. Peruvian.**—A very superior six-rowed naked barley, re-introduced to notice by the Earl of Lonsdale in 1847, and is at present a great favourite. It is a very prolific variety, and its malting properties are pronounced excellent.

193 **9. Square.**—This variety was received from M. Vilmorin and Co., Paris. Differs from the Commom Bere, in being three or four days sooner ripe, and having a thinner skin; properties which it may have acquired by being grown successively in the more genial climate of France, and is probably the same variety. It is cultivated extensively in some parts of Germany.

194 **10. Victoria.**—The introduction of this may be considered as the first step to the acquirement of superior varieties of the old Bigg or Bere, compared with which, it produces longer straw, is longer eared, often containing 70 to 100 grains in each, more prolific, and produces a finer sample, instances having been known of its weighing as much as 96 lbs. per bushel, and yielding 13 quarters per acre. Carefully conducted experiments in the Lothians, and in the highlands of Perthshire, the latter about 500 feet above the level of the sea, prove it a most promising acquisition, as adapted for either low and fertile, or elevated and late, districts. The merit of bringing the Victoria Bere under the notice of cultivators in this country is due to Mr. Fulton, a farmer near Maybole, in Ayrshire, who first obtained a few ears of it from the Belfast Botanic Gardens, in 1836.

195 **11. Winter Black.**—Ear long, containing from 60 to 70 grains, of a black or dark-bluish colour, larger than those of Common Bere; awns adhering to the grain, long, and dark coloured. Very prolific; but maltsters and brewers, generally, have a strong prejudice against it, more by reason of its colour than anything else. It is not so hardy as the White Winter, but, by being earlier, is better adapted for sowing in spring. However, when sown as a spring barley, that operation should not be deferred much beyond the end of March, otherwise it will not shoot equally, but rather assume a biennial habit, no part of it running to seed until the season following. On this account it is sometimes sown

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H. VULGARE. Four-rowed.

by the French in June and July, and eaten on the ground by sheep, as in the case of the St. John's Day Rye. When treated in this manner it is found to withstand the winter better than when sown in September or October.

196 **12. Winter White.**—Ear thicker, and rather longer, larger, thicker skinned, and sample altogether coarser than the Common Bere. It is considered by the French as being more productive than any other variety of barley. It is much cultivated in the north of France, and said to be very well adapted for the making of beer. Sown generally in autumn, and ripens before any of the spring-sown sorts; but if sown in spring, it is a week or a fortnight later in ripening than the latest of them.

2° HORDEUM HEXASTICHON. (*Linn.*)

H. hexasticchon.

SIX-ROWED BARLEY.

197 **13. True Six-Rowed Barley.**—Known, also, as Pomeranian and as Six-rowed White Winter Barley. Grain placed in six equidistant and distinct rows; lower grains placed nearly at right angles with the rachis, or stalk; awns, in consequence, much spread. In this species the grains are long, not well filled, and have the awns adhering to them with great tenacity. It is, altogether, the coarsest in sample of any of the barleys, but hardy and prolific. It is occasionally sown in France, and, also, in Britain, sometimes as a winter, and sometimes as a spring barley, and is found to answer pretty well as either. It is nearly a fortnight longer in arriving at maturity than Common Bere.

198 **14. Chinese.**—A variety introduced from China; but is evidently the same as the above, owing what little distinction there may be to the influence of climate. The awns are very brittle and snap off when the grain is ripe.

3° HORDEUM ZEOCRITON. (*Linn.*)

H. zeocriton.

PUTNEY, FAN, SPRAT, OR BATTLEDORE BARLEY.

199 **15. Fan, Sprat, or Battledore.**—Ear short, and very broad at the base, tapering towards the extremity; grain standing out from the rachis as in the last species;

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H. zeocriton. Two-rowed.

awns spreading much to both sides, very much resembling *Hordeum hexastichon* in all its parts, except in the number or rows of grain in the ear, which is only two. This sort is scarcely in cultivation, nor does it seem deserving of more attention.

200 **16. Fluck-Wheat.**—This variety was selected in a field at Knockandū, near Ballandalloch, Banffshire, and differs from the Fan or Sprat in having a narrower ear, with shorter grains, and, consequently, forming a superior sample. It does not appear likely to deserve extensive cultivation, but is interesting as serving, together with the Bute and Golden Barleys, to connect the forms of the two reputed species, *Hordeum distichon* and *H. zeocriton* of Linnæus.

H. distichon.

4° HORDEUM DISTICHON. (*Linn.*)

TWO-ROWED OR LONG-EARED BARLEY.

In this as in the last species, the ear is only two-rowed, but it is considerably more elongated, and of equal breadth throughout; the grains are more imbricated, or placed so as to overlap one another, instead of standing out from the rachis.

201 **17. Abyssinian Black.**—A very old variety long lost sight of; but in consequence of its very superior qualities is likely to become a favourite.

202 **18. Annat.**—This very superior variety is the produce of two ears, picked in a field on the farm of Flawcraig, Carse of Gowrie, in 1830, and since grown by Mr. A. Gorrie, at Annat Garden—hence its name. In some comparative experiments with Common Barley on the one side, and Chevalier on the other, it seemed to have the advantage of both in bulk of straw, and was five days ripe before the former, and about a fortnight before the latter. It was also about two and a-half pounds per bushel heavier than the Chevalier. The grain is even more round and plump than that of the last-named variety, and of a bright yellow transparent colour.

203 **19. Australian.**—Very prolific, and valuable for its early ripening properties. The seed of this variety was received from Adelaide.

204 **20. Black.**—This sort is at once distinguished by its black or dark-blue

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H. DISTICHON. Two-rowed.

coloured grains, which are large and coarsely shaped. It is prolific, and yields a considerable bulk of straw, but is later, by six or eight days, in ripening than the Common variety. It is very likely that this variety may prove as hardy as the Winter Black. The black colour which distinguishes these two sorts, and from which they derive their names, is confined to the chaff (paleæ) or outer covering of the grain, on the removal of which the grain appears white, and will yield as white flour as any of the other kinds.

21. Black's Superlative.—This is an early variety, approaching to the Dunlop. Introduced to Perthshire from England, where, after several years' cultivation, the stock ultimately fell into the hands of the late Mr. Black, farmer, at Rosiehill, in the Carse of Gowrie, whose name it bears in that district, he having been its only grower for several years, until its merits attracted the attention of neighbouring cultivators, especially that of Sir John Richardson, Bart. of Pitfour, who, in the beginning of August 1839, cut a field of it about a week before harvest was commenced elsewhere in that part of the country, and who found it to possess the additional qualifications of prolificacy and superiority of sample. 205

22. Brown's.—So named from its originator, the late Mr. David Brown, farmer, Fornought, Perthshire. A hardy, early, and prolific variety; much esteemed by growers in that and the neighbouring county of Forfar, especially in the Carse of Gowrie and Strathmore districts; and although belonging to that class generally termed long-grained barleys, it is found to weigh well, and is much esteemed by maltsters. 206

23. Bute.—A variety selected by Mr. Samuel Girdwood, Isle of Bute, in a field of Chevalier Barley. It is said to be considerably earlier than that sort, as hardy and more prolific; but experiments are still wanted to ascertain its actual merits. In form of ear, it bears a considerable resemblance to the Italian, but is considerably darker in colour, as well as smaller grained. 207

24. Chancellor.—Ear rather long; grain not very close set; quality of the sample rather inferior, compared with some of the other varieties. 208

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H. DISTICHON. Two-rowed.

209 **25. Chevalier.**—Ear resembling that of the Common, but containing, on an average, two or four grains more in each; grain rounder and plumper, and sample every way superior, but not so well adapted for sowing on late soils, being eight or ten days longer in ripening. Introduced from England some years ago, and now in general cultivation in the best agricultural districts of Scotland. The English samples, generally speaking, present a marked superiority in colour to the Scottish; but instances are far from rare in which Chevalier Barley is grown in this country of excellent quality, and equal in colour to any of the English samples.

210 **26. Common, or English.**—Ear in general from three to four inches long, by one-third of an inch broad, containing twenty-eight or thirty grains, which are not very close set on the rachis; awns extending about the length of the ear beyond its point. It may be considered four or six days later than the Common Bere, is less prolific, but yields a much superior sample, and is held in greater esteem by maltsters. It is, however, not so well suited for inferior soils, and high elevated late places.

211 **27. Dunlop.**—Ear and grain similar in size and shape to those of Common Barley, but, together with the straw, a good deal darker in colour, particularly a few days before ripening. This variety is now cultivated to a considerable extent in Perth- and Forfar-shires, as well as some parts towards the south-west of Scotland. It is about a week earlier than Common Barley. The earliness of the Dunlop especially recommends it to the attention of cultivators in the later districts and higher altitudes at which barley is grown.

212 **28. Golden, or Italian.**—Ear short, but remarkably close, broad, and compact; grain larger than in any other variety of *H. distichon*, plump, and of a bright light yellowish colour. For some years after its introduction, this variety rapidly extended in cultivation on account of its earliness, beauty of sample, and prolificacy; but of late some growers begin to entertain a belief that it is rather an impoverizing crop for the soil, and are, consequently, discontinuing its culture. Regarding this, however, there is still a considerable diversity of opi-

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H. DISTICHON. Six-rowed.

nion. The Italian Barley is pretty extensively cultivated about Deanston and other places in the neighbourhood of Stirling, where it is known as Golden Barley. It was first introduced into that district and cultivated by the late well known James Smith of Deanston. Under the name of Italian Barley, it was introduced into Ayrshire some years ago, from the Alps of Europe, and hence sometimes called Alpine Barley.

213 **29. Golden, New.**—An improved variety of the Golden, or Italian, for which we are indebted to Mr Veitch, Crieff.

214 **30. Holstein.**—This variety was introduced from Holstein several years ago, and has proved to be very prolific on secondary soils. It is much stronger than the Chevalier, and is thus better suited for more exposed situations.

215 **31. Lord Western's.**—A variety, of English origin, grown under this name in East Lothian, the characteristics and history of which have not been obtained; but it does not seem to have received much attention from the generality of cultivators.

216 **32. Naked Two-Rowed.**—Ear long, containing twenty-eight or thirty very large grains, which separate from the palese, or chaff, in the manner of wheat. This variety has been introduced to the notice of agriculturists at various times, and under different names, but its cultivation has always been abandoned, or, at least, never carried to a great extent. Miller mentions "there being cultivated to a considerable extent in Staffordshire, about sixty or seventy years since, under the name of *Triticum speltum*, a sort of naked barley or wheat barley, the ear shaped like barley, but the grain like wheat; that it made good bread and good malt, and yielded a good increase; but, as no mention is made of it in Page's View of the Agriculture of that country in 1796," he supposes it to be lost, or not in cultivation. About twenty years since, the late Mr. Loudon introduced it from the north of Europe, under the name of Siberian Barley, and distributed it amongst several cultivators in various parts of Britain. One portion, consisting of about fifty grains, which he sent to Mr. Gorrie, Annat Garden, Perthshire, and which was sown in the garden, yielded a considerable return of grain,

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H. DISTICHON. Two-rowed.

and ripened early; but on its cultivation being extended to the field, its straw was found to become very brittle and tender towards the period of ripening, so as to be unfit for supporting the ears, and completely incapable of forming into ropes for binding. Its cultivation was, therefore, abandoned. The grain, however, on being ground, yielded a good barley-flour, and, had it not been for the above-mentioned circumstance, it might have been cultivated with advantage for that purpose. In 1834, we received a sample of this variety from Professor Fischer of St. Petersburgh, under the name of Himalayan Barley.

217 **33. Nottingham Long-Ear.**—Some years since, this variety was very favourably noticed in several English agricultural periodicals; it does not as yet, however, appear to have attracted much attention in Scotland; and, in as far as can be judged of from its merits, when grown along with others in our Experimental Grounds, these do not appear to be in any way superior. Ears long, but, being loose or open, do not contain more than the usual number of grains, which are rather above an average size, and, when well harvested, form a bright yellow-coloured sample.

218 **34. Pittallie.**—Ear short; grain of a dull colour, but forming a good sample.

219 **35. Pomeranian, or German.**—A variety lately imported, and which has been grown very successfully in different parts of Scotland, especially in Ross and other northern counties. It is early and prolific, produces a tall firm straw, with long narrow ears, each usually containing upwards of thirty longish-shaped, but thin-skinned and light-coloured grains, which weigh well, and form a superior sample.

220 **36. Potter's, or Zealand.**—So named in compliment to Mr. David Potter of Hundon, in Suffolk, its first grower in Britain, who obtained it out of a cargo imported to Ipswich from the north of Europe: he reports that the success attending the growth of it has been such, that it is now the most generally cultivated variety in that neighbourhood. It was introduced from England to the north of Scotland some years since, by Sir Francis Mackenzie, Bart. of Gairloch, who found it to produce as much as nine quarters per acre, and to yield a superior

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H. DISTICHON. Two-rowed.

sample. It is also known in Northumberland and Berwickshire, where it is held in high esteem by cultivators.

37. Providence.—An English variety, the first plant of which is said to have been found by a person at Lytchett Heath, Wiltshire, growing in the corner of his garden, in the year 1835 or 1836, which ripened thirty to forty ears in June, and the root being left, is reported to have produced two more crops the same season, the grain being of large size and superior quality. In Scotland, the true merits of this variety have not yet been ascertained, nor is it ever likely to realize expectations founded on the above flattering description of its merits; yet its earliness alone would claim for it a fair trial. 221

38. Royston.—Grain large and remote; sample rather inferior; when nearly ripe, darker in colour than Common Barley. 222

39. St. Madoes.—This variety was discovered, in 1838, by the Rev. Mr. Noble of St Madoes, in a field of the Dunlop; and is evidently a very distinct kind. It is distinguished by the whiteness, length, and strength of the straw, and the distance of the grains from each other, which is a recommendation in damp climates, as the moisture is not so easily retained as in a compactly constructed ear. 223

40. Stain's.—This variety was sent from London by Lord Lyndoch, to his land-steward, Mr. Stain, Dalcrue, Perthshire, and is now known in that neighbourhood under the above name. It is late in ripening, and superior in sample to the Common Barley. The name, Siberian Barley, seems to be applied to different varieties, amongst which may be mentioned the Two-rowed Naked Barley, but the true Siberian is undoubtedly the Four- or Six-rowed Naked Barley. 224

41. Suffolk, or Norfolk, Short-Necked.—A leafy-stalked strong-awned variety, which has been grown for several years in the eastern districts of Strathmore, where it is held in considerable repute by some growers, from its capability of withstanding rough weather; while others have discontinued its growth, fro m finding it to be eight or twelve days later than the common sorts, and also more 225

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H. DISTICHON. Two-rowed.

liable to sprout in wet weather. It was first introduced to these parts from the Earl of Leicester's property in Norfolk, who was in the practice of cultivating it on his higher grounds. In good seasons it yields a heavy crop and superior sample; but in Scotland it can only be recommended for seaward and other early districts much exposed to wind.

226 **42. Tuscany Early.**—Ear of medium length and of a delicate colour; grain long and spindle-shaped; a variety not held in very great esteem.

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IV. AVENA.* (*Linn.*)

AVENA. Oat.

Belonging to Class Endogens, or Monocotyledons; Glumal Alliance of Lindley; Natural Order, Graminaceæ; Linn. Cl. 3, Ord. 2.

English—OAT.	*Dutch*—HAVER.	*Portuguese*—AVEA
French—AVOINE.	*Danish*—HAVRE.	*Russian*—OWES.
Italian—VENA.	*Spanish*—AVENA.	*Polish*—OWIES.
German—HAFER.		

"Oats for their feast the Scottish shepherds grind."—ANON.

Origin of the Oat.

FROM the circumstance of the Oat being nowhere mentioned in the Sacred Writings, we must conclude that it was not known in the East. Anson, in the account of his circumnavigation, mentions having found the common oat growing wild in the Island of Juan Fernandez; but this wants corroboration. Colonel Chesney, in his exploring expedition in Mesopotamia, found a kind of oat on the banks of the Euphrates, which is figured by Dr. Lindley, in Morton's "Cyclopædia of Agriculture," and described as about eight inches in height, and covered with fine soft hairs on the leaves, especially near the ground. About half a dozen spikelets formed a little terminating panicle. Each spikelet contained from two to three florets, with long, sharp-pointed, rather membranous side lobes to the lower paleæ, and a long intermediate dorsal awn; but the paleæ, although quite bald at the back, as in the common oat, were furnished with a tuft of long brown hairs at their base. In the latter respect, and in the hairiness of the leaves, this plant is materially different from the common oat; still it is not inconceivable, Dr. Lindley adds, that it may be either the original state of this kind of corn, or that it may be in a state of degeneracy, arising from many centuries of neglect.

* It is difficult to say from whence this word is derived; it is, however, most generally supposed to be from the Celtic "aten," from *etan*, to eat.

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AVENA.

Oats cultivated in Italy.

Although we have no mention made in Scripture of the oat, it appears to have been in cultivation in Italy at a very early period of the Christian era; for the tyrant Caligula is reported to have fed his favourite horse with gilt oats out of a golden cup.

Its probable habitat.

The well-known hardiness of the common cultivated species (*Avena sativa*), would lead to the supposition that it must be of northern origin; for its range of cultivation extends even to the arctic zone. In Scotland, of which the oat may be considered the staple agricultural product, no soil or district is found either too rich or too poor, too hot or too cold for it. Within the range of the altitude for the cereal grains, the most tenacious clays, meagre gravels, or other light lands moss, or bog, when sufficiently drained, will all produce fair crops, of one variety or another, if the tillage be properly attended to, and the soil judiciously sown and covered. In fact, Scotland is the country admittedly the best fitted for its growth; and hence its importance in comparison with the other cereals. The estimated number of acres of cultivated land in Scotland, is 2,400,000, of which 220,000 are under wheat; 280,000 under barley; 1,275,000 under oats; and the remainder under various other crops. These facts prove, at all events, what an important grain the oat is to the Scottish agriculturist. Our Collection comprises nearly sixty varieties, about thirty of which are grown in Scotland; but of these not more than twelve are in general cultivation. These twelve varieties, enumerated in the order of their general cultivation, are the Potato, Hopetoun, Sandy, Early Angus, Late Angus, Grey Angus, Blainslie, Berlie, Dun, Friesland, Black Tartarian, and Barbachlaw.

Varieties in cultivation.

Botanical classification.

The varieties of oats are classified botanically under seven species:—1. *Avena, sativa;* 2. *A. orientalis;* 3. *A. brevis;* 4. *A. nuda;* 5. *A. sterilis;* 6. *A. fatua;* and 7. *A. strigosa.* For a further account of the varieties of the oat, and the districts suited to its culture, the reader is referred to a paper by our Mr. Lawson, in the 29th number of the Highland Society's Transactions.

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I.—AVENA SATIVA.

A. SATIVA.

COMMON CULTIVATED OAT.

Common oat.

1. Angus, Early.—Nearly as early as the Potato Oat, and less liable to be shaken when ripe. In other respects this more resembles the Strathallan. It is much cultivated in the district of Angus, and northward in some parts of the Highlands: also in most other parts of Scotland, but particularly in the late and more exposed districts. 227

2. Angus, Late.—Straw longer than in the early variety; panicle rather larger, and more loose; grain rather longer, generally a shade darker in colour, and from a week to a fortnight later in ripening. This is a well-known and superior variety, much cultivated, particularly in the central districts of Scotland, in some parts of which it is termed Common Oat, or Common Late Oat. 228

3. Angus, Grey.—Differs from the Late Angus in the grain being longer, and of a bluish-grey colour. Not so generally cultivated, but is, nevertheless, a good sort. 229

4. Archangel, or Black Riga Oat.—Grain small and plump, generally three in each spikelet; colour darker than that of the Winter Dun, but not so dark as that of the Common or Old Black; straw rather long, and not liable to lodge. A very early and prolific variety. 230

5. Barbachlaw.—This variety is said to have originated on the farm of Barbachlaw, near Bathgate, and has long been esteemed by cultivators in the higher districts of the Lothians, from its hardiness, earliness, and adaptation to elevated, moorish, and wet soils. It is productive both in straw and grain; but the latter forms only an inferior sample, being long, thin, and often very bristly, so that it is principally in demand for feeding. 231

6. Berlie, English.—Ripens fully as soon as the Early Angus and about as easily shaken by winds when ripe; but its straw is firmer, and not so readily lodged or broken down; the grain also, in general, heavier, less awned, and of a fine light yellow colour. This variety is well adapted for rich, heavy, and clay soils; and its prolificness, combined with its other merits, is such as to 232

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A. SATIVA. Common oat.

render it a favourite with growers, so that its cultivation has extended rapidly in the districts where it is known. Originally introduced to Aberdeenshire, as a seed oat, from England about twenty years since, when it more than probably received its present appellation.

233 **7. Berlie, Scotch.**—More resembles the Kildrummie than any other variety now cultivated in the north-eastern districts of Scotland. It differs, however, in its straw, which is said to be preferred by cattle to that of any other sort, being fully longer, and less firm in texture; it is also a few days later in ripening. The grain is rather long awned, as well as whiter coloured. It is particularly adapted for growing on light early soils; is very prolific, not easily shaken, and meals well. This variety is supposed to have been cultivated in Aberdeen and neighbouring counties for upwards of half a century.

234 **8. Blainslie.**—The grain is more round and plump in this than in the Cupar Grange, which, however, it greatly resembles. It acquires its name from being raised at Blainslie. This is the Common Oat of the south-east districts of Scotland, where it is much cultivated.

235 **9. Blue Major.**—This variety bears a marked resemblance to the Georgian. Grain, however, rather thinner skinned, and darker in colour, being tinged with a very light-bluish tint, particularly on the back of the lower palea, and the whole of the upper.

236 **10. Church's, or Churick's.**—A large-grained and thick-skinned sort, allied to the Georgian, but possessing its characteristics in even a higher degree, the smaller seed of the spikelet being generally entirely embedded in the thickened skin of the larger; so that it is not likely ever to receive increased cultivation. In the fourth volume of the Highland Society's Transactions, published in 1816, a variety, under the name of Church's Early Oat, is described, which appears to have been a totally distinct sort from the present, and was originally received from Scotland by a Mr. Church, in Northumberland, who first sowed it in 1776, and cultivated it for twenty-five years on the same farm, without its exhibiting any symptoms of degeneracy. Towards the end of last century it

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was much grown in the north of England and Berwickshire, but appears to have been ultimately superseded by the Potato Oat, which it somewhat resembles; but produces a longer, thicker-skinned grain, and forms an inferior sample.

237

11. Cleland Early.—Exhibited by its originator, Mr. Dalrymple of Cleland, at the Highland and Agricultural Society's Show at Glasgow, September 1838, who described it as being "hardy, prolific, and from a fortnight to three weeks earlier than the Potato Oat.' The Cleland seems to resemble the Cumberland. Early in several characteristics, but produces a shorter grain and heavier sample; some growers report it as being rather liable to sedge-root, but further trials are yet necessary to ascertain its real merits.

238

12. Common, or Old Black.—In length of straw, and form of panicle, similar to the Potato Oat; grain large, and rather well filled, of a shining black colour, lighter towards the point. This oat was formerly much cultivated, not only in the Highlands, but also, on inferior soils, in the Lowlands of Scotland; its cultivation is now, however, much circumscribed, owing more to the colour than to any real defect in the quality. Farmers, in some parts, have a peculiar antipathy to black, or dun-coloured oats. One reason they give for this is, that the coloured grains degenerate, and become white, thus giving the sample a mixed appearance; but probably this mixture arises, not from any real degeneracy, but from the slovenly manner in which barns are often kept; and particularly from thrashing black grain in a mill after white sorts, without the machinery being properly cleaned.

239

13. Cumberland Early.—This variety, as its name implies, originated in the county of Cumberland, and is the produce of a single plant, which, from its earliness, first attracted attention in 1833 or 1834. The result of trials in our Experimental Grounds, extending over three years, has shewn this variety to be decidedly earlier than the Potato Oat, also longer in straw and less liable to be shaken by high winds; but the grain being light and very inferior in quality, no encouragement is held out to farmers to extend its cultivation.

240

14. Cupar Grange.—So called from being first raised at the farm of Cupar

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A. SATIVA. Common oat.

Orange in Forfarshire. Panicle large, spreading, and somewhat loose; grain large, and generally well filled, forming a superior sample; straw rather longer than that of the Late Angus, than which it is also a few days longer in ripening.

241 **15. Danish.**—Panicle large and spreading; outer chaff large and broad, of a light yellowish colour; grain long, light, and awned, forming a very inferior sample; straw of medium length.

242 **16. Drummond.**—This variety requires about a week longer to ripen than the Potato Oat. It bears more resemblance to the Early Angus, but differs from it also in its upper paleæ or adhesive skin, being of a bright light reddish or brown colour. Grown in some parts of Perthshire, and is found well adapted for very strong clay soils.

243 **17. Dun, Common.**—Grain long, but well filled; skin not very thick, of a dark-like colour, lightish towards the point; panicles very large and spreading; straw very long, and not apt to lodge. This is a very prolific sort, and, perhaps, more deserving of cultivation than any other of the coloured oats. Although somewhat late, it is well adapted for light elevated soils, and is much grown on such in the Lothians and neighbouring districts, as about the Pentland and Lammermuir hills.

244 **18. Dun, Winter.**—Straw shorter, and panicle not so much spreading as in the last variety; grains also rather shorter, and of the same colour; very hardy, never being injured by the frosts. This oat is, by the French, considered one of their best, and is one of their most extensively cultivated varieties. Generally sown in September, and ripens early. It is grown as a winter oat to the greatest extent in the west and south-west of France, as in the department of Brittany, where, as well as in other parts, it is occasionally sown in spring; in which case, however, the sample is always inferior to that sown in winter. The Winter Dun is now cultivated to a considerable extent in several of the southern and midland sheep counties of England, and such trials as have been made in Scotland prove it to be very hardy. It is known in some districts by the name of Winter Feed Oats, from its use in affording a rich pasturage for sheep in the

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earlier spring months, which treatment is of essential benefit to the after-growth of the crop, especially on light dry soils, from the sheep-droppings acting as a manure, combined with the consolidating of the soil by their treading.

19. **Dutch Early.**—Introduced from Holland, some years since, by Mr. William Milne, Bolton, near Haddington who finds it to be as early as the Potato Oat, while it is more prolific. On inferior soils it succeeds better, and yields more straw than any other variety with which he is acquainted. In sample it approaches that of the Hopetoun, but is a shade darker coloured. 245

20. **Dyock's Early.**—For the introduction of this variety to general notice, the Highland and Agricultural Society of Scotland awarded their silver medal, in January 1848, to Mr. John Watson, Ledmore, Brechin. Originally raised by a Mr. Dyock, near Aberdeen, and has been grown in the vicinity of Brechin for many years, where it is also known by the name of James Davidson's Oat, it having been first cultivated in that quarter by a grocer and small farmer of that name. It is hardy, early, very prolific, and exceedingly well adapted for the higher corn lands. Grain rather long, somewhat awned, and forms a medium sample. As it is rather liable to shake in rough weather, it should be cut before being fully ripe. 246

21. **Essex, Early.**—In general habit much resembling the Georgian; panicle, however, more contracted, and altogether of a whiter colour; equally early; grain rather more awned, and thinner skinned. 247

22. **Essex, Red.**—Apparently the same as the *Avoine rousse* of the French. Straw rather long; panicle not spreading much; grain long, not well filled; thickish skinned, of a bright reddish colour, approaching to white towards the small end, and blackish towards the other extremity. This, although a prolific variety, yields a very meagre inferior sample, and is scarcely deserving of cultivation. 248

23. **Flemish, Early.**—This variety has been long known, although never extensively cultivated in Scotland, and may be described as yielding a good sample, having longish straw, and being a hardy free grower, bearing, in its general characteristics, a considerable relation to the Early Dutch. 249

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A. sativa. Common oat.

250 **24. Friesland, or Dutch.**—About 1820 this oat was much cultivated in Perthshire, but it degenerated rapidly, ripening unequally, and is now almost out of culture; it is an early variety, rather shorter than the Blainslie or Cupar Grange.

251 **25. Georgian.**—Grain very large, and thick skinned, seldom awned; panicle very large, and spreading; straw tall and strong, not apt to become lodged, about as early as the Kent; young plants of a peculiar upright habit of growth, not spreading or tillering much; leaves very broad and luxuriant, of a light yellowish green colour. This variety was introduced, in 1845, by Captain Barclay Allardice of Ury. At first, it received a rapid and extensive cultivation, on account of its earliness, and the great quantity of straw and grain which it produced. Owing, however, to the thickness of skin, it is found to meal very indifferently, while the straw, from its coarseness, is disliked by cattle. From these causes, and also, from the crop being supposed of a deteriorating nature for the soil, its cultivation has been almost abandoned. In France, the Georgian Oat is held in much esteem.

252 **26. Hopetoun.**—This variety was raised some years since by Mr. Patrick Shirreff, Mungoswells, East-Lothian: it is a few days earlier than the Potato Oat, and not so liable to be shaken by wind. Straw longer, and not so apt to bend or lodge; panicle larger, and more spreading; grain rather more awned, and a shade browner in colour, and easily distinguished by a small reddish mark in the centre of the front of the grain. Dating from 1830, the cultivation of the Hopetoun Oat has extended rapidly throughout every well cultivated district in Scotland. It is now generally believed by farmers to be better adapted for light, than for strong clay soils, and that it is more liable to be attacked by smut or black than the Potato Oat. Its cultivation is still increasing, and for growing on poor late moorish or newly-reclaimed lands, no variety is better adapted.

253 **27. Irish, Common.**—This sort is longer in straw, looser and lighter in the panicle, late, and every way inferior to the Kildrummy.

254 **28. Irish, or Strathallan Early.**—About two or three days longer in ripening

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A. SATIVA. Common oat.

than the Potato Oat; longer in straw; grain more elongated, and not so plump or well filled. This variety is more commonly known by the former than the latter name in the higher parts of Strathearn and west of Perthshire, where it is most extensively cultivated. The name is generally supposed to be a corruption of *Earish* or *Earlyish*, in allusion to its early ripening property, and not indicative, as some have supposed, of an Irish origin. At four hundred feet above the level of the sea it succeeds well on a considerable variety of soils; but on such as are of a rich or superior description, it is very apt to become lodged from its great length of straw. It is less liable than several of the finer sorts to suffer injury from the grub or other enemies; and in harvest it is well calculated to withstand rough, windy, and wet weather; but its culture is only advisable in exposed and late situations.

29. Kent, Early.—This sort yields a very superior sample, resembling that of the Potato Oat, differing, however, from it in being shorter in straw, and about a week earlier. In the young plant, the leaves, instead of being narrow and prostrate, are of a light-green colour, broad, and upright, not tillering well; in this respect resembling the Georgian. 255

30. Kildrummy.—Straw long; panicle erect, rather large, but thinner, and containing fewer and lighter grains than that of most of the sorts. Nearly a week earlier than the Blainslie. This variety can only be accounted a second-rate oat, but is suitable for high districts. In Kildrummy, in the north of Aberdeenshire, where it has been long and extensively cultivated, a tradition exists, that, nearly a century ago, after a bad season, this variety was brought from the Mains of Halkerton, south of the Grampians; and that, in the Mearns and neighbouring districts of Angus, it was then known by the name of Halkerton Oat. Since the introduction of Sandy's Oat, the cultivation of the Kildrummy is decreasing in the Garioch, Strathbogie, and adjoining districts. On soils of a poor or inferior nature, the Kildrummy yields fully as good a crop in early seasons as the Potato; but its sample, although of a fine, clear, silvery colour, is in general two to three pounds per bushel lighter. 256

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A. SATIVA. Common oat.

257 **31. Lancashire Witches Early.**—This variety seems, from its name, to have originated in Lancashire, but was introduced to Scotland from Northumberland in 1837. Experiments made in East Lothian shew it to be fully four days earlier than the Early Angus, while it is rather longer in straw, more prolific, and superior in quality; the grain being larger, more plump and heavier; qualities which must render it a desirable acquisition to cultivators in late districts.

258 **32. London Don.**—Panicle long, and pretty close; grain forming a good sample. This variety seems to be little known in the Lothians; but is cultivated extensively in the south-west of Scotland. Yields a large bulk of straw, is not apt to lodge, and deserving of a more extended cultivation.

259 **33. Macbiehill.**—Sometimes known as Red Macbiehill, a name which it acquires from being of a very clear light brown or reddish colour; so light, however, as to entitle it to a place amongst the White Oats; it differs little in other respects from the Drummond.

260 **34. Orleans.**—A very early variety, which, on that account, and from its producing a good sample, has been pretty extensively cultivated, of late years, in the department of Orleans in France. It bears a greater resemblance to the Black or Brown Riga than to any other in the Collection; but is lighter, or more of a brown colour, rather larger in grain, and heavier in sample. No proper trial has, as yet, been made of this sort in Scotland, but it seems worthy of attention. Another variety received from M. Vilmorin, Paris, along with this, under the name of the Three-Month Black Oat, he at first considered to be synonymous, but which, on further trial, was found to be the same as the Common or Old Black Oat.

261 **35. Poland.**—This variety has been in cultivation for a considerable length of time; but it is doubtful whether that which now bears the name be the original variety. In general appearance it much resembles an inferior sample of Potato Oats.

262 **36. Potato Oat.**—This variety, which has received a more extensive cultivation than perhaps any other, was first discovered amongst a field of potatoes (hence

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A. SATIVA. Common oat.

its name) in Cumberland, in 1788. Panicle rather compact and regular; straw rather short; grain very white, short, and well filled; seldom bearded or awned, except when cultivated too long on dry soils without changing the seed; the presence of the awn often arising from the effects of cultivation, climate, soil, or other causes.

263

37. Potato Oat of the French.—Differs most essentially, in all its parts, from our Potato Oat, being nearly a fortnight longer in ripening; panicle more spreading; grain a shade darker in colour, longer, and more pointed; almost always awned; straw longer, and rather more slender. Although the French had this oat originally from England, and although oats deteriorate very much when cultivated in the climate of France, yet the difference between it and our Potato Oat is too great to leave the least doubt of their being distinct varieties. The French variety is very inferior, and not deserving of cultivation in this country.

264

38. Sandy.—This estimable variety was discovered, in 1824 or 1825, on the Farm of Milltoun of Noth, in the parish of Rhynie, Aberdeenshire, then occupied by Mr. Pirie, who, in the winter and spring preceding, had occasion to cut a number of ditches through his pastures. On a bank formed by the earth which had been taken out of one of these, his cow-herd *Sandy* or Alexander Thomson observed, in course of the summer, an oat plant of extraordinary luxuriant growth, which Mr. Pirie carefully preserved for seed, considering it to be different from any of the varieties then grown in the country; and so rapidly did it increase under his management, that, in a few years, the produce was not only sufficient to sow his own farm, but also to supply many of his neighbours. Mr. William Murray of Slioch, from whom the above information was derived, further states, that Sandy's Oat bears a considerable resemblance to a variety formerly known in that part of the country by the name of the Red or Lord Chief Baron's Oat, having, like it, a reddish tinge, when fully ripe; but Sandy's produces more straw, is not quite so early, and yields a fuller crop on inferior ground. Compared with the Potato Oat, the qualities of which are so universally known, Sandy's is much hardier, produces a heavier crop of straw, which is much firmer in texture, and

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A. SATIVA. Common oat.

not liable to get lodged or broken down in rough weather; it also yields a heavier and more bulky crop of grain in bad seasons, ripens more regularly, and is not nearly so subject to shake in a gale of wind. The best evidence which can be adduced of the superiority of Sandy's Oat is, that, in its native district, its culture has now almost superseded that of the Potato Oat; and there, instances have been known of its weighing as much as 46 lbs. and 47 lbs. per bushel, but 43 lbs. or 44 lbs. is considered a good average weight.

265 **39. Siberian.**—This variety was received, in autumn 1839, through Messrs. J. G. Booth and Co. of Hamburgh, from the north of Europe; who reported having, by actual experiment, found it to be fully a fortnight earlier than the Potato Oat, while its produce in straw is about a third heavier than that of the Hopetoun. In sample, it has somewhat the appearance of the Georgian, having large and thickish-skinned grains, which, however, both weigh and meal well; qualities which, together with its hardiness and prolificness, seem to prove that it will yet be found a highly suitable variety for the later districts of this country. Trials in various parts, especially the north of Scotland, prove it to be from a fortnight to three weeks earlier than the Potato Oat, while, in other respects, its merits, as stated above, are not over-rated.

266 **40. Tam Finlay's.**—A variety held in considerable esteem by cultivators, both in the high and lower parts of Ayrshire, as well as in the neighbouring counties, where it was formerly named the Old Poland, but acquired that by which it is presently known, from having been brought into general notice by Thomas Finlay, a person who was in the habit of renting old pasture lands for the purpose of breaking them up and taking two crops of oats, for which he universally used this sort, and with very considerable success. It is very hardy, ripens about a week later than the Potato Oat, and produces a greater quantity of straw than any of the older early sorts. Its sample possesses rather an inferior appearance, and is chiefly in demand for feeding; but is said to yield a greater quantity of meal, in proportion to its weight, than any other of those sorts generally termed long grained oats.

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A. SATIVA. Common oat.

41. Tuscany.—A sample of this oat was received, in spring 1841, from the Editor of the *Genesee Farmer*, Rochester, North America; which, in the following summer, produced a slender, tough, and rather short straw; with plump, short, thickish-skinned, bright coloured grain. It seems less productive than some of the better known sorts; although further trial is still required to prove whether it is worthy of extended culture. 267

42. Three-Grained White.—Straw of medium length; panicle rather large and spreading; grains three in each spikelet; a fair sample, but a little thick in the skin. This variety is easily distinguished by the number of grains in the spikelet, and may turn out a valuable acquisition. 268

II. AVENA ORIENTALIS.

TARTARIAN, HUNGARIAN, OR ONE-SEEDED OAT.

A. ORIENTALIS. Tartarian oat.

This species differs from the last in having its panicle more contracted, and altogether confined to one side, or secundate.

43. Tartarian, White.—Straw very long (about six feet), upright, and not apt to lodge; panicle long, and slightly bent to the side on which the grains are; grain of a dull white colour, long awned, and not well filled, forming rather a meagre sample. This variety is very prolific, but considerably longer in ripening than any of the preceding, and, therefore, only fitted for cultivation in early situations, while it requires a superior soil. Not in general cultivation in this country. In France it seems to suit better, and is grown to a greater extent. 269

44. Tartarian, Black.—This variety, although resembling the White in the form of its panicle, is, nevertheless, very different in other respects. Straw of medium length; grain black, not so long, plumper and less awned or bearded than the White. One of our earliest oats, and answers best on high and rather inferior light soils; is very prolific, and meals much better than the White. Its culture is yearly extending in Scotland. Has been cultivated in some parts of 270

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A. orientalis. Tartarian oat.

England for a considerable length of time, for feeding horses, for which it is well adapted.

271 **45. Tartarian, Early White.**—Similar to the Black, except in colour, in a field of which it was discovered by Mr. A. Gorrie.

A. brevis.

III. AVENA BREVIS.

272 **46. Short Oat.**—Panicle mostly confined to one side; spikelets containing one or two grains, which are always awned; grain plump, and terminating abruptly at both ends, particularly at the point; of a dunnish colour when ripe. The kernel is easily rubbed out, and there are generally a few scattered hairs about the insertion of the awn, and towards the point of the palea, or chaff. The straw is long and fine, much relished by cattle, either in a green or dry state. Its cultivation does not seem to have been attended to in Britain, but is chiefly confined to some of the most mountainous districts of France and Spain, where it is preferred to all others, from its earliness, and adaptation to such elevated and inferior soils. Supposed to have been first introduced into this country from Germany in 1804.

A. nuda. Naked oat.

IV. AVENA NUDA.

NAKED OAT.

Spikelets containing three to six grains; palea or chaff not adhering to the seed, as in the other species of oat,—hence the name.

273 **47. Naked, Common.**—Grain about the size, and similar to the kernel of common oats, three or four in each spikelet, the lower, and sometimes two, of which are bearded. The cultivation of this oat has been attempted at different times, in various parts of Britain, for the last two or three hundred years. Gerard, who wrote on agriculture, in 1597, says, that at that period "unhulled or naked oats, were cultivated in Norfolk and Suffolk." Their cultivation, however, in any place has never been carried on extensively, for any length of

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time, owing chiefly, no doubt, to their liability to shake when nearly ripe. They are very prolific, and grow well on inferior soils, particularly on such as contain a considerable portion of peat.

A. ORIENTALIS. Naked oat.

48. Naked, Small.—This sort differs from the last in being considerably smaller in all its parts; panicle more contracted, and one-sided; florets more compact, and the awns or beards, which are two in each spikelet, longer, and more persistent; it is, also, much later, and its grain not half the size. It is certainly less deserving of cultivation than the preceding, and can only be valued as a curious variety in collections. 274

V. AVENA STERILIS.

A. STERILIS.

49. Animal, or Fly Oat.—Straw short and reedy; panicle one-sided, spreading; back of the under florets covered with long bristly hairs as far up as the insertion of the awn. This oat is never cultivated, except as a curiosity. The awns and bristly hairs, when acted upon alternately by heat and moisture, twist about, so as to give the grain a creeping motion, resembling that of a large fly; hence its name of Fly, or Animated Oat, and sometimes that of the Hygrometric Oat. It is of a black or dark brown colour, and, from its resemblance to a winged insect, is occasionally used as a bait for salmon hooks. 275

VI. AVENA FATUA.

A. FATUA.

50. Wild Oat.—Straw long, rather slender and upright; panicle spreading equally on all sides, large, open, and loose-like; spikelets generally containing three florets, which are all bearded and hairy at the base; colour similar to the *A. sterilis*. This is supposed to be the original from which all the varieties of *A. sativa* are derived, although there is no proper reason given for such a supposition; and, from the marked difference between them, the probability of such a supposition may well be questioned. The seeds of the Wild Oat have been known to retain their vegetative powers for an extraordinary length of time, when buried in the earth, at a depth sufficient to prevent their springing. When 276

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A. FATUA.

nearly ripe, the seed is very liable to be shaken out, and thus becomes, in some places, a most troublesome weed. It is never cultivated for any special purpose; but the awns possess similar hygrometric qualities, as those of *A. sterilis*, and are also used for baiting hooks. It is often mistaken for the next, both being indiscriminately termed Wild Oats.

277 **51. Markel, or Markley Bearded Oat.**—Like its progenitor, the Wild Oat, this variety has very long straw, with an unusually large panicle; grain, also, larger, better filled, and generally of a blackish colour, but shewing a tendency to become lighter under cultivation. Readily distinguished from all other dark-coloured cultivated oats by the presence of a beard or tuft of hairs at the base, which is the principal characteristic of the species. Grown in some of the higher central districts of England for feeding, and in the northern parts of Scotland for meal. It was introduced to the Carse of Gowrie from Yorkshire some years since, by Miss Yeman Spence of Murie. Its extended culture is only advisable in very late situations.

A. STRIGOSA.

VII. AVENA STRIGOSA.

This is a genus separated by modern botanists from that of *Avena*, and named *Danthonia Strigosa*, chiefly on account of the lower palese or chaff being much prolonged, two-toothed, and so deeply divided that the awn appears as if inserted between the teeth.

278 **52. Common Danthonia, or Bristle-Pointed Oat.**—Panicle inclined to one side, nearly simple; grain rather small, and thick-skinned. This oat is cultivated in several countries, particularly in France, for the purpose of feeding cattle, being either cut in a green state, or allowed to ripen, and given them in the straw. It is often to be met with in oat fields, particularly amongst the later sorts, and is termed Wild Oat by farmers, they making no distinction between it and the *A. fatua*. The difference may, however, be at once detected, by the Bristle-Pointed Oat having rather shorter straw, and its panicle nodding or bending to one side, while that of the former is spreading and almost upright; also by the

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A. STRIGOSA.

lower end of the grain being smooth, while that of *A. fatua* is hairy. This is believed by some, to have been the original cultivated oat of Scotland. It is still, or was very lately, cultivated in some parts of the north of Scotland, and in the Orkney and Zetland Isles, as a bread corn.

279

53. Argyllshire Small.—This appears to be an improved variety of the former, and only differs from it, in having a more compound panicle, producing more seed, and being a shade lighter in colour. In Argyllshire it is cultivated for cattle, and given to them in winter on the straw.

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Zea.
Indian Corn.

V. ZEA.* (*Linn.*)

Belonging to Class Endogens, or Monocotyledons; Glumal Alliance of Lindley; Natural Order, Graminaceæ; Linn. Cl. 21, *Ord.* 3.

English—Maise or Indian Corn.
French—Bled de Turquie.
German—Turkisch Korn, Mays.
Italian—Grano Turco o Siciliano.
Spanish—Trigo de Indias, Trigo de Turquia.

ZEA MAYS.

Origin of Indian Corn.

ZEA Mays is supposed to be indigenous to South America, and, certainly, was the only cereal grain cultivated there at the time of its discovery. Its introduction to Britain dates from the middle of the sixteenth century; but the various attempts to raise it as a field crop have not been successful. The dwarf varieties of *zea mays*, are the only ones found to ripen in this country, and that only in very favourable seasons. Under the most favourable circumstances, however, the plant never attains a luxuriant growth, as will be seen from the specimens in the Collection, which had every advantage, both as to soil and other circumstances. On the whole, the cultivation of it in Scotland cannot be recommended, except, perhaps, as green food.

280 1. **Forty Days Maise.**—Height about two feet; average length of the spike about four inches; colour of the grains yellow; size small, compared with most other varieties.

281 2. **Egyptian, or Chicken Corn.**—*Zea Mais à Poulet* of M. Vilmorin's Catalogue, from whom it was received. This is the smallest and earliest of the Indian Corns; colour of the seed yellow, as in the last. Sown along with the former, in our Experimental Grounds, and ripened nearly a fortnight sooner. Its quantity of produce, however, compared with that of the others, is very small.

282 3. **Beaked Indian Corn.**—Differs from the former in the grain being angularly shaped at the point opposed to the rachis.

* From *zao*, to live, in reference to its nutritive properties.

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VI. PANICUM.* (*Linn.*)

PANICUM. Millet.

Belonging to Class Endogens, or Monocotyledons; Glumal Alliance of Lindley; Natural Order, Graminaceæ; Linn. Cl. 3, Ord. 2.

English—MILLET. | *Italian*—MIGLIO, PANICASTRELLO. | *German*—HIRSE.
French—MIL, MILLET. | | *Spanish*—MIJO.

"Sow beans and cinquefoil in a mellow soil,
And millet, springing from your annual toil."
VIRGIL.

Origin of Millet.

IN the book of the Prophet Ezekiel (iv. 9,) is contained the only allusion to this grain. By some writers the millet is conjectured to be the parched corn which Boaz gave to Ruth, and which David carried to his brethren. The native country of the millet is supposed to be Tartary, where it is largely used for food. In the time of Columella it was cultivated in Italy, who mentions it as growing abundantly in the Campania.

Its unsuitableness for this climate.

From the lateness of the period at which the millets ripen, it is questionable how far they are at all fitted for our climate. In the south of England their culture has been attempted, but is now abandoned, owing to the facility with which they are imported from Germany and the south of Europe.

In America, the common millet is often known to yield twenty bushels per acre, after one quarter of a bushel sown; and the hay is so much relished by cattle, and horses in particular, notwithstanding its seeming coarseness, that they prefer it to that of common Timothy-grass. In Germany, and the southern countries of Europe, also in America, some parts of Asia, and in most countries lying under the warmer latitudes of the temperate zone, the millets form a very essential article in the domestic economy of the inhabitants, being deprived of the husk,

* From *panis*, bread, or *panicula*, a panicle.

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PANICUM.
Millet.

and used whole as rice, or ground into meal or flour, and made into bread, &c. In this country they are chiefly used for feeding small birds.

P. MILIACEUM.
Common millet.

PANICUM MILIACEUM.

COMMON MILLET.

Panicle loose, nodding; leaves long, broad, slightly hairy; sheath hairy; valves, or loose chaff, sharp-pointed; seed, when ripe, about one-eighth of an inch in length, ovate, and slightly pointed at both ends, smooth, shining; height about three and a-half or four feet.

The following varieties are arranged according to their time of ripening, the difference between the earliest and the latest being only about a week.

283 **1. Common Millet.**—Panicle rather fasciculated, and nodding a good deal to one side; colour light green; colour of the seed yellow.

284 **2. Grey-Seeded Millet.**—Panicle more loose and spreading than that of the last variety; seed greyish coloured; panicle darker green than the last.

285 **3. White-Seeded Millet.**—Panicle light green, more contracted or bundled and nodding than in any of the others; seeds white.

286 **4. Black-Seeded Millet.**—Panicle of a mixed blackish-green colour, very loose; seeds almost black.

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VII. SETARIA.* *(Beauv.)*

SETARIA. Millet.

Belonging to Class Endogens, or Monocotyledons; Glumal Alliance of Lindley; Natural Order, Graminaceæ; Linn. Cl. 3, Ord. 2.

This is a genus, separated from that of *Panicum* on account of its panicles being contracted so as to resemble a spike; its other characteristics are the same, except in having a bristle-like appendage proceeding from under the glumes, considerably longer than the spikelet, termed the involucrum.

1° SETARIA ITALICA.

S. ITALICA. Italian millet.

ITALIAN MILLET.

Spike-like panicle, nodding to one side; seeds about half as long as those of the Common Millet, not so small, and of a lighter colour, slightly tinged with green; height three to four feet. Seeds of this have not ripened in our Experimental Grounds. 287

2° SETARIA GERMANICA.

S. GERMANICA. German millet.

GERMAN MILLET.

Differs from the last in being much dwarfer; spike shorter, more compact, and upright; seeds about the same size, and of a dark greyish colour; equally late in ripening.

1. Red-Seeded Millet.—This variety seems to resemble the Italian Millet, but is much earlier; seed longer, smoother, and of a reddish colour; spike not so pendulous; height about four feet. This, together with the following, ripens about the same time as the Common Millet (*Panicum miliaceum*). 288

2. Small Whitish-Seeded Millet.—Spike larger than in any of the preceding; bristles much shorter; height about four feet. 289

* From *seta*, a bristle, in reference to the hairy involucre.

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VIII. PHALARIS.* (*Linn.*)

Belonging to Class Endogens, or Monocotyledons; Glumal Alliance of Lindley; Natural Order, Graminaceæ; Linn. Cl. 3, Ord. 2.

English—COMMON CANARY GRASS. | *French*—ALPISTE.

PHALARIS CANARIENSIS.
Common Canary grass.
290

1° PHALARIS CANARIENSIS.

THIS plant is not cultivated to any extent in Scotland; but is largely grown in England for its seed, which is used for feeding birds. The straw is, comparatively, worthless, being both hard and woody. The husk of the thrashed-out grain is, however, used for mixing with other chaff, when it forms good food for horses. In the early stages of its growth, the plant bears a considerable resemblance to oats or wheat.

Panicle contracted so as to resemble an oval spike; straw from one and a-half to two feet in height; grain smooth and shining, of a whitish colour, difficult to thrash or separate from the glumes. Although the canary grass is cultivated to a considerable extent in some parts of England, chiefly as food for birds, its growth has not been attempted to any great extent in Scotland; and it is questionable, whether it would be attended with any beneficial results, as it requires a longer time to arrive at maturity, than either oats or barley. It requires a superior soil, well pulverized and manured; and is, even in the south of England, considered a precarious crop. In Scotland it does not ripen until the end of September or beginning of October. In the Canary Islands it is ground into flour and made into a nutritious bread by the inhabitants.

P. CAPENSIS.
Cape Canary grass
291

2° PHALARIS CAPENSIS.

CAPE CANARY GRASS.

Introduced from the Cape of Good Hope in 1804. Differs from the former,

* From *phalaros*, brilliant, in consequence of the shining character of the seeds.

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in having larger and more slender straw; a smaller and more tapering panicle; considerably smaller and darker-coloured grains, and is every way inferior, except in being rather earlier.

P. CAPENSIS.
Cape Canary grass.

3° PHALARIS PARADOXA.

BRISTLE-SPIKED CANARY GRASS.

P. PARADOXA.
Bristle-spiked grass.
292

About one foot in height; seed small, and in shape similar to the last; ripens in August, but is so unproductive, as to be of little or no value as a cereal grass.

MANUFACTURED PRODUCTS FROM CEREAL GRAINS.

In the Collection will be found specimens of all the descriptions of farina manufactured from the various species of Cereal Grains, which it is considered unnecessary here to particularize.

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SECT. II.—LEGUMINOUS PLANTS.

F. VULGARIS. Beans.

I. FABA* VULGARIS. (*Mœnch.*)

Belonging to Class Exogens or Dicotyledons; Rosal Alliance of Lindley; Natural Order, Fabaceæ; Linn. Cl. 14, *Ord.* 4.

English—Bean.	*Welsh*—Faen.	*Portuguese*—Favas.
French—Feve.	*Italian*—Fave.	*Russian*—Boobii.
German—Bohnen.	*Spanish*—Habas.	

"Long let us walk
Where the breeze blows from yon extended field
Of blossomed beans. Arabia cannot boast
A fuller gale of joy than liberal thence
Breathes through the sense, and takes the ravished soul."

Thomson.

Origin of beans.

WE find our earliest allusion to the bean in 2nd Samuel, xvii. 28, where, among other food brought unto David, when fleeing from Absolom, beans are enumerated. It occurs only in one other part of the Scriptures (Ezek. iv. 9). Although little is known as to the extent of its culture in Palestine, yet there is every reason to believe that it formed a common article of diet to the antient as it now does to the modern Hebrews and Egyptians. From the unsuitableness of the climate and soil it is more than probable, however, that the Jews obtained their supplies of this esculent from the cultivated shores of the Nile, in exchange for other commodities. Frequent allusion is made to the beans by the older poets and historians; and, as Pliny tells us, cakes made of its meal were used as votive

* Paxton, following Isodorus, says the word is derived from *phago*, to eat.

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F. VULGARIS. Bean.

offerings in the Pagan rites and ceremonies. Although so used, the great priests or sacrificers of the Romans, called Flamines, abstained from the use of beans, having a belief that the souls of the departed resided in them. From this superstition they were always used at obsequies. Another reason given for this abstinence from the use of beans is a supposition that letters and characters of an ominous nature, indicating heaviness and signs of death, were marked on the flowers. The Egyptian priests went even further, and denounced it a crime to look at beans. A passage occurs in Lucian to the effect that "to eat beans and to eat our father's head were equal crimes." Phillips has collected a number of curious and interesting facts relative to the bean, among others that the modern practice of *blackballing* obnoxious persons was derived from the antients, who used white and black beans in gathering the votes of the people.

The native country of the bean, although not precisely known, is most probably of Asiatic origin, Persia being generally supposed to be its precise habitat. The bean has been cultivated in Britain from the earliest ages, but when or by whom introduced, is shrouded in the obscurity of centuries. Beans enter into the rotation of cropping in the early districts of Scotland, and are very successfully cultivated on all strong soils, forming an excellent preparation for wheat. The straw or haulm forms nutritious food for horses during the winter and spring months. We divide the bean into three sections:—1° common field varieties; 2° varieties suitable for either field or garden; 3° garden varieties.

1° FABA VULGARIS ARVENSIS.

F. VULGARIS ARVENSIS. Field bean.

FIELD BEANS, OR SUCH AS ARE ONLY ADAPTED FOR FIELD CULTURE.

1. Alexandrian.—This sort grows about the same height as the Common, but is later in ripening; in consequence of which the seeds are seldom so plump or well filled. In size and shape they much resemble the Common, but differ in colour, being of a dull reddish brown. Is not at all suitable for general culture in this country. 293

2. Annfield.—Height usually about four and a-half feet; pods three and a-half 294

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F. VULGARIS. Field bean.

to four inches long, and generally containing three or four beans, which are of a large size, somewhat flattened, and most commonly tapered to a small roundish point. This variety is of medium earliness, and rather productive, especially when grown in superior early soils. Bears a near relation to the Early Mazagan, and consequently is one of the largest class of field beans.

295 **3. Common Scottish, or Horse.**—This is almost the only sort cultivated in Scotland, and so well known as to require little or no description. In length the seed is from one-half to five-eighths of an inch, by three-eighths in breadth, generally slightly or rather irregularly compressed and wrinkled on the sides, and frequently a little hollowed or flattened at the end; of a whitish or light brownish colour, occasionally interspersed with darker blotches, particularly towards the extremities; colour of the eye black; straw three to five feet in length; middling prolific; average weight per bushel 62 lbs. There is perhaps no other grain, over the shape and colour of which the climate, soil, and culture, has so much influence as in the case of the bean. Thus, in a warm dry summer, the sample is always more plump, and white in colour, particularly if followed by a dry harvest; and more so when cultivated on a strong rich clay, than on a light soil, and when drilled than when sown broadcast. The great diversity of appearance, however, in some samples of Common Beans, is owing more to a mixture of varieties than to any other cause. That such a mixture exists, any person may perceive by examining a field of beans in full flower, when they will be seen to present an infinite diversity in the colour of their flowers; and, although this may not, and does not, always precede a different colour or form in the seed, yet it doubtless constitutes a variety; and, therefore, the seeds are more likely to vary than if the flowers were all the same.

296 **4. Heligoland.**—Height averaging about three and a-half feet; pods small, straight, cylindrically shaped, and very numerous, as many as fifty being occasionally found on a single plant; beans three or four in each pod, well-filled, of a roundish or slightly oblong shape, and very small, forming a superior and heavy sample. This is an early and hardy-growing sort, and consequently suited for

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F. VULGARIS. Common bean.

the higher classes of bean soils, but many growers who have given it a fair trial are beginning to discontinue its culture, from finding that the smallness of its seeds causes a deficiency in the actual bulk of produce, notwithstanding its unusual fertility.

5. New Large Red, or Scarlet.—This is a remarkably distinct variety, having large reddish coloured beans, and being very prolific. 297

6. Pigeon.—This sort is the smallest seeded of all the beans; it is also of dwarf growth, but rather early and prolific; and in colour considerably darker than any of the other Field Beans. It derives its name from being used instead of peas for feeding pigeons. It has not hitherto been extensively cultivated in this country, but to a considerable extent on the lighter bean soils of Germany, where it originated. 298

7. Purple, Prolific.—Height four to four and a-half feet; pods numerous, usually containing four, occasionally five seeds, which are rather smaller in size, but similar in form to those of the Common Tick Bean; of a bright purple or reddish colour when ripe, and becoming much darker afterwards. This variety, although found to succeed well in good early districts, has been almost entirely discontinued, from a prejudice existing amongst dealers in regard to the colour of its sample. 299

8. Purple.—This sort resembles the Winter very much, except in the colour of its flower and seeds; the former a darker and of a reddish or pink-like tinge, and the latter a reddish brown or purple. It is scarcely so prolific, which may be owing, in a great measure, to the lateness of the period at which it ripens. It might probably succeed as a winter bean, but has not hitherto been tried as such in this country. 300

9. Tick, Common.—This sort is seldom cultivated in Scotland. In England and France, it is the kind of field bean held in highest estimation, and there often termed Common Horse Bean, or Common Field Bean, from its being more commonly cultivated than any other sort. It differs from the Common Scottish, in having shorter straw, being more prolific, seeds rather smaller, more cylindrical, and rounded at the ends. It is also better suited for growing on light soils. 301

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F. VULGARIS. Common bean.

302 **10. Tick, Harrow.**—This variety is still smaller, in all its parts, than the last; it is also better suited for light soils. Its seeds are remarkably plump and hardy. Besides the Common and Harrow, there are many varieties known by the name of Tick Beans, as the Flat Ticks, Essex Ticks, French Ticks, &c., which differ only from the Common by being cultivated on different soils, or under different circumstances.

303 **11. Winter.**—Straw from three to four feet; remarkably hardy and prolific; seed small, very plump and heavy, seldom having the least depression in the sides; same colour as the Common Bean, but with the addition of a dark greenish spot on the short side, a little below the termination of the small very black eye. This sort has not been, as yet, fairly tried in Scotland. In France and England, it is found to stand the winters well, although often more severe than ours. It was introduced into England about the year 1825.

F. VULGARIS ARV. VEL HORTENSIS. Field or garden bean.

2°. FABA VULGARIS ARVENSIS VEL HORTENSIS.

FIELD OR GARDEN BEANS, OR SUCH AS ARE GENERALLY CULTIVATED IN THE GARDENS IN SCOTLAND; BUT MAY BE GROWN IN THE FIELD UNDER FAVOURABLE CIRCUMSTANCES.

304 **12. Child's New Early Long-Pod.**—This variety was introduced, about 1835, by Mr. Child, an eminent seedsman in London; it is fully as prolific as the Common Long-Pod, but considerably earlier; and its seeds more irregularly shaped, and much thicker, especially towards the eye. There are several varieties of long-pod beans, under different names; but a season or two's culture, under similar circumstances, is found to produce so great a similarity in their habits, that it is very probable their temporary dissimilarity arises only from the effects of soil and previous culture. The present variety, however, may be mentioned, as possessing more distinct and seemingly permanent characteristics than the others.

305 **13. Long-Podded.**—Stalk four to five feet in height; pods six to seven inches long by about one and one-fourth broad, rather pendulous, containing four or five beans; seed, when ripe, whitish, about an inch long, and five-eighths of an inch

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F. VULGARIS ARV. VEL HORTENSIS.

Field or Garden bean.

in breadth, flat, and generally rounded at the point. This sort is about a week later than the Mazagan, but rather more prolific. This variety is also known as Hangdown Long-Pod, Early Long-Pod, Large Long-Pod, Lisbon, Early Lisbon, Sandwich, Early Mom, &c.

306

14. Mazagan Early.—This sort is supposed to have been originally brought from a Portuguese settlement on the coast of Africa. When grown in that place, the seeds are said to be smaller even than our horse-beans, but they grow to a larger size when cultivated in Portugal or England. Stem about four feet high, and rather slender; pods four to five inches long, rather narrow, and containing four or five seeds; flowers, as in most of the white and green varieties, white, with dark brownish stripes on the vexillum or standard, and two dark brown spots on the alæ or wings; seeds, when ripe, of a whitish colour, rather larger, and more flattened than those of the Common. In Scotland, the cultivation of this sort, as a field bean, has seldom been attempted; but, from its early and prolific habit, it might no doubt succeed in favourable situations. It grows best on a stiff or medium soil, avoiding alike the strong clays and very light soils, particularly if of an inferior quality.

3° FABA VULGARIS HORTENSIS.

F. VULGARIS HORTENSIS.

Garden bean.

GARDEN BEANS.

307

15. Dwarf Fan, or Cluster.—This is an old and esteemed garden bean, but, from its dwarf habit of growth, wholly unfit for field culture. Height two to two and a-half feet; very prolific, and the earliest and dwarfest of all the garden beans; pods short, and nearly cylindrical, containing three or four beans, which are larger and rather more flattened than the Mazagan.

308

16. Johnson's Wonderful.—Introduced about fifteen years since; pods long, containing six or eight beans, resembling in size and shape those of the Windsor.

309

17. Long-Pod, Dutch.—Height four to five feet; pods long, broad, and slightly pendulous, containing five, and often six seeds, which are about the size

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F. VULGARIS HORTENSIS.

Garden beau.

of the Windsor, but more elongated. This is rather a superior sort, but not so well known as some of the others; it is an excellent bearer, and rather late.

310 **18. Long-Pod, Green.**—This sort differs from the Common Long-Pod, principally in the colour of its seed, which is always green, even when ripe, and in being considerably later in arriving at maturity. It is an excellent bearer, and of good quality. Known, also, as Green Nonpariel, and Green Genoa.

311 **19. Scarlet-Blossomed.**—Height about four feet; colour of the flower generally a bright red approaching to scarlet, but varying from a pale red to a dark, or almost black colour. Pods medium size, containing, generally, four or five beans, similar in shape, but rather longer than those of the long-podded sort, and differing from all the rest in colour, which is a darkish rusty-brown. An excellent bearer, but not held in esteem on account of its colour; when in bloom, however, it is very ornamental.

312 **20. Toker.**—Height about five feet; pods rather long and very broad, containing three or four beans of a whitish colour; differing from the Windsor in being of an elongated oval shape. This is a medium late sort, and an excellent bearer, but considered rather coarse, and, therefore, not so much esteemed as the Windsor.

313 **21. Violette.**—Height about four and a-half feet; pods long and broad, containing three or four beans, which are of a size and shape intermediate between the Lond-Pod and Windsor; of a very light purple colour when young, and dark red when fully ripe, on which account it is not liked for table use. This is rather an early sort, coming in use about the same time as the Common Long-Pod.

314 **22. White-Blossom.**—The flower of this sort differs from all the others in being pure white, having no dark spots on the standard nor wings; it is very apt to degenerate, but may easily be distinguished, when in flower, from the above circumstance; height nearly four feet; pods long, nearly cylindrical, and slightly pendulous, containing generally four, but sometimes five beans, about six-eighths of an inch in length by half an inch in breadth, and rather thick or plump, of a black colour, or mixed with dark brown when ripe. It is a moderate bearer, of ex-

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F. VULGARIS HORTENSIS.
Garden bean.

cellent quality, having little of the harsh beany flavour, but not liked when in an advanced state, on account of the darkness of its colour. This variety possesses the curious anomaly of having the whitest flowers and blackest seeds of any in the Collection. With regard to the period of ripening, both this and the Red Blossoming may be said to occupy a medium place, being neither very early nor very late. Sometimes called White Blossomed Long-Podded.

315 **23. Windsor, Green.**—This sort bears the same relation to the White or Common Windsor that the Green does to the Common White Long-Pod, except in its ripening about the same time, or only a few days later. It has the same advantages as the former, of retaining its green colour when ripe, and may, on that account, be used at table in a more advanced state than the White sort.

316 **24. Windsor, Red.**—Height about four feet; pods rather narrower than those of the White Windsor, containing about the same number of beans; similar in shape and size, but of a darker colour when young, changing to a bright scarlet when full grown, and to a deep red when fully ripe. This is a late sort, prolific, and of good quality, but like the Violette, not liked by cooks, on account of the colour. Known, also, as Scarlet Windsor and Dark Red.

317 **25. Windsor, White.**—Height about four feet; pods short, broad, containing two or three seeds, which are of a flat circular form, about an inch in diameter, but varying in size according to season, soil, and culture, and of a whitish colour. This sort is much esteemed, and extensively cultivated. It is considered the earliest of late garden beans; a sure bearer, and, from its not ripening regularly, may be gathered day after day for some time. Known, also, as Broad Windsor, Broad Spanish, Mumford, Turkey, Taylor's Windsor, &c.

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Phaseolus.
Kidney-bean.

II. PHASEOLUS.* (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Rosal Alliance of Lindley; Natural Order, Fabaceæ; Linn. Cl. 17, *Ord.* 4.

English—Kidney-Beans. | *French*—Haricot. | *Dutch*—Turcksboonen.

Origin of kidney-bean.

THIS plant has almost universally obtained in England the name of French Bean, but erroneously. The old French name for it, *Feves de Rome*, sufficiently indicates that it is not a native of France. In the time of Elizabeth, the name Roman Bean was commonly used by us. Pliny mentions the kidney-bean as *phaseoli*, and describes the pod as being eaten with the seed. Although no doubt can be entertained of the eastern origin of the kidney bean, evidence exists that it was first introduced to this country in 1509, from the Netherlands, the White Dutch variety being the earliest sort known here.

The varieties of kidney-bean generally cultivated, belong to two distinct species, *Phaseolus vulgaris* and *P. multiflorus*, the dwarf sorts being referred to the former, and the runners or pole-beans to the latter species. The dwarf sorts are, in general, the earliest, but the others are much more productive; although less adapted for cultivating for their ripe seeds, were such accounted a desirable object in this country.

As a farinaceous seed for the food of man, the kidney-bean is considered by the French as being far superior to any other legume, and next, if not of equal importance, with wheat. In this country, however, notwithstanding that many of the earlier varieties might be grown to advantage on light early soils, their culture has hitherto been scarcely extended beyond the gardens of the opulent; and even there, kidney-beans occupy but a small breadth, and are only cultivated for their pods, which are used in a green state, or when about half grown. In France, and

* From *phaselus*, a little boat, to which the pods bear a fancied resemblance.

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other countries of Europe, as also in the Canadas and United States of America, and elsewhere, kidney-beans are not only used, in a green state, to a much greater extent than in this country, but are cultivated in the fields, and by every cottager who possesses a piece of garden-ground, for their ripe seeds, of which they make various kinds of dishes, and consider them of as much importance in their domestic economy as the cottagers in this country do potatoes. Unlike the common bean, the kidney-bean does best in a light, sharp, dry soil, of medium fertility, and the produce, per acre, even of some of the dwarf varieties, is often more than double that of any other cultivated legume.

Although kidney-beans, in a ripe state, are not likely soon to form any considerable portion of the food of man in this country, yet many of the early and prolific sorts offers an opportunity of adding to the very few dishes, at a cheap rate, which appear on the cottager's table.

1° PHASEOLUS VULGARIS.

DWARF KIDNEY-BEANS.

WHITE SEEDED.

1. Battersea.—This differs from the Dutch in having longer seeds; rather shorter and broader pods; and in being later in arriving at maturity. 318

2. Canterbury, Dwarf.—Pods three to four inches in length, nearly straight, narrow, and well filled; seeds about half an inch in length by one-fourth in breadth, slightly flattened, and nearly straight. This is a well-known, very dwarf, and early sort, but rather unproductive. It is, nevertheless, an esteemed sort for an early crop, the young pods being very tender. 319

3. Dutch, Dwarf.—Pods longer, more straight and flattened, than those of the Sabre sort; seeds larger, and of the same shape, but ripens fully earlier. Is in pretty general cultivation in this country, and reckoned one of the best for using in a green state. From its long pods being liable to lie upon the ground, and apt to become damaged in wet or damp weather, it is not so well suited for growing extensively for its ripe seed. 320

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P. VULGARIS. Dwarf kidney-bean.

321 **4. Flageolet-Shaped.**—Seeds not so broad, and more compressed than any of the other kidney-shaped; pods short and narrow; habit of the plant very dwarf, rather late, and not very productive. It is, however, of superior quality, and by some an esteemed sort.

322 **5. Sabre, Dwarf.**—Pods six to seven inches long, bent or curved; seeds slightly flattened, full five-eighths of an inch in length by about three-eighths in breadth, very slightly kidney-shaped; the seeds straight, and the eye a little sunk. In Britain this sort has received only a medium share of cultivation, but in Holland it is reckoned a very superior sort; is extensively cultivated, and found to be well adapted for using either in a green or ripe state.

323 **6. Soissons, Dwarf.**—This is a very early sort, medium prolific, but not much cultivated; pods medium long, and a little flattened; seeds about six-eighths of an inch in length by nearly three-eighths of an inch in breadth, a good deal flattened and bent or kidney-shaped; very much hollowed at the eye. It is equally well adapted for using in a green and ripe state; but is scarcely known in Britain.

324 **7. Swiss, White.**—Rather larger, and more cylindrical than the Flageolet; pods long, and rather narrow; late and productive; little known in this country.

325 **8. White, Common Round.**—In France this sort is much esteemed for field culture, particularly in the western districts, where it is often distinguished by the name of *favette*, or little bean. Pods long, nearly cylindrical, and well filled with seeds, which, when ripe, are about three-eighths of an inch in diameter, nearly round, and rather swollen than sunk at the eye; medium early, but not well adapted for using in a green state, by reason of the inner skin of the pods being more tough than in most of the others. It is, therefore, only cultivated in France for its ripe seed, and on that account little known in Britain.

DUN AND YELLOWISH-COLOURED.

326 **9. Canadian, or Round American.**—Pods long (five to six inches), slightly curved, almost cylindrical when ripe; seeds of a light copper colour, nearly round (about one-half by three-eighths of an inch), not sunk at the eye, which is

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P. VULGARIS. Kidney-bean.

surrounded by a dark red ring; medium early, but not well adapted for use in a green state, the pods being rather tough; it is, however, very prolific, and well adapted for growing, when ripe seed is the object in view.

10. Chinese, Round Light Dun.—Habit of growth very dwarf and close; pods short (from two to three inches) and having a tough skin; beans small, nearly round, and of a very light dun or almost white colour, with a darker coloured ring round the eye. A very inferior variety. 327

11. Liver-Coloured.—Differs from the Straw-Coloured in being of a dwarfer and more compact habit of growth, and in its seeds being considerably darker in colour. The two kinds are well known amongst cultivators in this country; they are early, very hardy, and productive. On the Continent they are esteemed alike for using in a green and ripe state. 328

12. Straw-Coloured.—Pods long, and nearly straight, almost cylindrical when ripe, and containing about six seeds of a light dun colour, slightly kidney-shaped; about five-eighths of an inch in length, and a little flattened; habit of growth rather tall, and a little straggling. Known, also, as Light Dun, and Cream-Coloured. 329

13. Yellow, Small.—Rather smaller in all its parts than the Canadian; of a dark copper colour, with a very small dark ring round the eye, also rather tough skinned, but cultivated occasionally in this country for its green pods. It is very prolific, and might be grown to advantage for its ripe seeds. Known, also, as Small Round Yellow, and Dwarf Yellow. 330

SPECKLED.

14. Flesh-Coloured.—Pods generally five inches long, curved, slightly speckled with brown, narrow, and nearly cylindrical when ripe, containing about five seeds, which are rather large, long, and slightly kidney-shaped; flesh-coloured, thinly and irregularly interspersed with reddish speckles; habit of growth dwarf and compact; early and prolific. 331

15. Fulmer Spotted.—Very dwarf, medium early, and prolific, ground colour of the seed dark purple, speckled light brown. 332

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P. VULGARIS. Kidney-bean.

333 **16. Jersey, Dwarf.**—Pods short, and nearly cylindrical; seeds small, and roundish, thickly interspersed with dark speckles, and in appearance resembling the seeds of the Common Yellow Lupine, but scarcely so much flattened; medium early, and prolific, suitable either for using in a green or ripe state.

334 **17. Magpie.**—Differs from the Zebra in having larger and darker pods, being much later, and not nearly so productive, and also in the ground colour of the bean, which is rather more inclined to a French white.

335 **18. Red Speckled.**—Pods long, nearly straight, and well-filled, slightly speckled into light brown; colour of the seeds dull red, thinly interspersed with light brown speckles, size and shape similar to the Magpie; habit of growth robust, and not very close; medium early, and a medium bearer.

336 **19. Zebra.**—Pods about the same size and shape as those of the Flesh-coloured, much speckled, with a dark purple or almost black colour; seeds same shape, and rather less than those of the Flesh-coloured; colour nearly white, rather sparingly interspersed with black or very dark purple speckles; habit of growth much stronger; it is also about a week later, and a still better bearer.

The whole of the speckled varieties are better adapted for using in a green than in a ripe state.

VARIOUS OTHER SORTS, NOT INCLUDED IN THE FOREGOING DIVISIONS.

337 **20. Chinese, Common Dwarf.**—Seeds same colour as the Round Seeded, but much more elongated; ripens earlier, grows stronger, and is in every way superior

338 **21. Chinese, Round-Seeded.**—Pods about four inches long, slightly bent, and almost cylindrical, when ripe containing four or five small seeds, which are almost round, of a reddish colour next the eye, and white on the opposite side; dwarf, and rather late, only a medium bearer.

339 **22. Negro Dwarf, or Black.**—Seed small, elongated, and black; pods long and cylindrical, slightly curved and abundant, a free grower, much esteemed, both in this country and on the Continent, for its green pods, and also

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occasionally cultivated for its ripe seeds. This sort is used very much for the food of the black population in the Brazils.

The following varieties, although referred to the tribe of *P. vulgaris*, have, nevertheless, short runners, particularly when sown late, or in wet seasons, and, therefore, seem to occupy an intermediate place between the true dwarfs and runners, *P. multiflorus*.

340 **23. Black Speckled.**—Compared with the Purple Speckled this sort has longer pods, darker coloured seeds, is a better bearer, and a little earlier; also cultivated for using in a green state.

341 **24. French Improved.**—This is a variety differing from the White and Soissons in having large pods about one foot long, by from one to one and a-half inches in breadth, a good deal compressed, and containing generally from ten to twelve or more seeds; the skin of the pods is also more tender, and better adapted for using in a green state.

342 **25. French New Imperial Pearl Beans.**—This is an improved variety of the former, being finer, and still more tender podded; they are both very superior sorts, and well worth the attention of cultivators.

343 **26. French Tall Pearl.**—Seeds small, round, white, and transparent; pods three to four inches long, well filled, and clasping the beans firm when ripe, so as to have a wrinkled-like appearance; pods remarkably tender and well adapted for using in a green state; an early variety, but too late to depend on for a crop of ripe seed in this climate. Known, also, as Turkey Peas.

344 **27. Purple-Speckled.**—Pods about four inches long, slightly flattened, straight, narrow, and speckled, with purple seeds, small, nearly straight on the sides, slightly compressed; ground colour dark purple, interspersed with light brown or straw coloured speckles; rather late, and but a medium bearer, chiefly cultivated for its green pods.

345 **28. Red Prague.**—Resembles the French Pearl in shape and habit of growth, also in being very good either green or ripe, but differs in the colour, which is

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P. VULGARIS. Kidney-bean.

reddish, and in being very late, and, on that account, not so well suited to our climate.

346 **29. Sabre Runner, or German Sabre.**—Resembles the White and Soissons, except in being of dwarf growth, having smaller seeds, and being equally well adapted for using either in a green or ripe state. Much cultivated in Germany, but scarcely ripens in this country, except under favourable circumstances.

347 **30. Soissons.**—This is only considered an improved variety of the White; its pods are generally longer, and its seeds of a more brilliant transparent white, but it degenerates when cultivated elsewhere than at Soissons, as our experiments have clearly proved.

348 **31. White Runners, Common.**—Pods long, broad, and crooked, containing seven or eight seeds, which are white, about an inch long, by half an inch in breadth, a good deal flattened, and kidney-shaped; grows to the height of three feet, but bears chiefly at about one foot from the ground.

P. MULTIFLORUS. Large runner.

2° PHASEOLUS MULTIFLORUS.

LARGE RUNNER OR POLE KIDNEY-BEAN.

Besides being larger in seed, and of much stronger growth than the varieties of *P. vulgaris*, those of this species are distinguished by the seedling plants being of a perennial nature, if protected from cold.

349 **32. Dutch White Runner.**—This sort has white flowers, and white seeds, it is also an abundant bearer, and by some considered superior to either of the other two varieties in quality.

350 **33. Painted Lady Runner.**—This differs from the scarlet in having the keel or centre of the flower almost white; its seeds are also much lighter coloured, and it is considered a better bearer.

351 **34. Scarlet Runner.**—This variety is too well known to require any description; besides being cultivated for its pods and seeds, it is often grown for its beautiful scarlet flowers.

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III. PISUM.* (*Linn.*)

PISUM. Pea.

Belonging to Class Exogens, or Dicotyledons; Rosal Alliance of Lindley; Natural Order, Fabaceæ; Linn. Cl. 17, *Ord.* 4.

English—PEAS. | *German*—ERBSEN. | *Spanish*—PESOLES.
French—POIS. | *Italian*—PISELLI. | *Russian*—GOROCH.

"Sike plentie of bowes among runcival pease,
To clamber thereon, and to branch at their ease;
So doing more tender and greater they wex,
If peacocke and turkey, leave jobbing their bex."

TUSSER.

Native country of the pea.

THIS plant is a native of the south of Europe, and has long been cultivated in this country; but the date of its introduction is unknown. Before the introduction of the potato, peas were much more extensively used as food than at the present day, although the garden varieties were rare in the early part of Elizabeth's reign, when they were imported from Holland as "dainties for ladies," according to Fuller.

Species.

The cultivated peas are generally divided into two distinct species. Such as have white flowers, with white or bluish coloured seeds (commonly termed garden peas), being included under the name of *Pisum sativum;* and such as have coloured flowers, and, in general, grey, dun, red, or speckled seed (field peas), under that of *P. arvense.* Their botanical characters are, however, not sufficiently distinct, nor permanent in their duration, to admit of their forming two distinct species; but, as the varieties in cultivation are so numerous, some mode of classification is necessary in order to admit of more easy reference; and, for this purpose, they are, in the present instance, divided into four classes, as follows:—

* Paxton derives it from the Celtic, *pis*, pea; others from *Pisa*, a town of Elis, where they were originally cultivated; but the former is undoubtedly the most correct etymology.

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Pisum. Varieties.

1° *Pisum sativum arvense*, or field peas. 2° *Pisum sativum arvense vel hortense*, peas suited either for field or garden culture. 3° *Pisum sativum hortense*, garden peas. 4° *Pisum sativum saccharatum*, varieties wanting the endocarp, termed sugar, or eatable-podded peas.

On the 29th of March most of the varieties enumerated in the following Collection were sown in our Experimental Grounds, with the view of comparing them with one another, and also of ascertaining, in some measure, their several properties or qualities; therefore, in any of the following descriptions, where the periods of flowering and ripening are mentioned, without any reference to the time of sowing, the above date is always to be understood. In the case of the garden peas, and those generally used in a green state, where their period of ripening is mentioned, it is not understood as applying to the period when they were fit for use, but to that at which their seed was perfectly ripe.

P. sativum arvense. Field pea.

1° PISUM SATIVUM ARVENSE.

FIELD PEAS, OR SUCH AS ARE MORE PARTICULARLY ADAPTED FOR FIELD CULTURE.

352 **1. American, Red or Purple.**—Pods generally in pairs, nearly straight, and semi-cylindrical; peas medium size, and of a darkish red purple colour, indistinctly interspersed with darker speckles; height four to five feet; medium early, and remarkably prolific. We received, a few years since, a sample of this variety from Mr. Thomson of Banchory, under the name of Roman Peas.

353 **2. Grey, Common.**—This is a late sort, generally sown alone in the early districts, or in mixture with common beans on strong lands, for which it is peculiarly adapted, from its requiring about the same time to mature its seeds. The pod is semi-cylindrical, long, and well filled, often containing from six to eight peas. In summer and autumn little difference is observable in the straw, but, when thrashed, three distinctly marked varieties appear, one spotted with a bluish-green ground, one light blue, and one bluish-coloured green without spots. When these peas

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P. SATIVUM ARVENSE. Field pea.

are separated from the beans by a properly-sized riddle, they are, in some districts, called *reeings*. This pea is very prolific; and its haulm forms excellent fodder for horses, superior to that of the more early field varieties.

354 **3. Hastings, Grey.**—This variety much resembles the Warwick in its seeds, but it differs in its pods being longer, and containing more peas; straw also much longer and more slender; its leaves are small, and placed rather remotely. It is also at least three weeks later in ripening than the Warwick. Is adapted for light soils and situations which are too late for the Common Grey, and was formerly grown to a considerable extent in some parts of Scotland; but its cultivation is now rapidly giving place to that of the Partridge.

355 **4. Painted Lady.**—Has beautiful dark red and whitish coloured blossoms, which, together with the pods, are produced in abundance towards the termination of the shoots; its seeds resemble those of the Partridge. In this country the cultivation of this pea is almost exclusively confined to the flower border, but on some parts of the Continent, and also in America, it is subjected to field culture.

356 **5. Partridge.**—Pods broad, and, occasionally, in pairs, containing five to seven seeds, which are of medium size, roundish, of a yellowish-brown speckled colour, with light-coloured eyes; straw thick and soft-like; leaves large and broad; average height four feet. About a fortnight earlier than the Hastings. This is generally reckoned the most suitable variety for growing in late situations, from its combining the properties of being very early, prolific, and of excellent quality. It is known, also, as the Grey Maple and Marlborough Pea.

357 **6. Purple-Podded.**—Pods generally in pairs and flattened, with thick fleshy skins, generally of a dark purple colour; but this characteristic is not permanent, as they are sometimes found with green pods, in which case they are, however, easily distinguished from those of other peas by their thick and fleshy nature. Peas of an average size, slightly and irregularly compressed, of a light dunnish colour; sample very superior in quality; height five feet, remarkably prolific, and earlier than the Partridge. As yet, this variety is little known amongst cultivators, but it seems possessed of properties which entitle it to an extensive share

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P. SATIVUM ARVENSE.

Field pea.

of cultivation, particularly in late situations. Sometimes called Australian, or Botany Bay Pea.

358 **7. Rounceval, Grey.**—This is at once the tallest growing, the latest, and largest of our field peas; pods often in pairs, broad, and rather flattened, containing five or six seeds, which are a good deal flattened and wrinkled, of a dunnish-brown colour, with black eyes; height six to eight feet. This variety is only adapted for the earlier districts of Scotland, but is extensively cultivated in some of the southern counties of England, and some parts of the Continent. Sometimes called Giant or Dutch Pea.

359 **8. Warwick, Early Grey.**—Pods very often in pairs, small, straight, and nearly cylindrical, containing each from three to five peas, which are small, round, or slightly compressed, with small purple speckles; height two to three feet; in flower 31st May, ripe 20th July; middling prolific. This is remarkable as being considerably earlier than any other field pea at present in cultivation. It seems well adapted for growing in late situations, and where it may not be likely to suffer from drought in the month of May or beginning of June. In dry warm soils its produce of straw is very inconsiderable. Known, also, as Early Nimble Hog Pea.

360 **9. Winter.**—The *pois gris d'hiver* of the French. Pods almost always in pairs, small, cylindrical, and straight, containing about six peas, which are smaller than any other of the field peas whatever, and of a dark colour; straw about four feet in length, small, and hard-like. In France and Germany this variety is generally sown in October, and ripens before any of the spring-sown field peas. If the sowing be, however, deferred until March, it is later in ripening than most of the other varieties sown at the same time. It is extremely hardy, and found to endure the severest winters, without suffering the least injury.

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P. SATIVUM ARV. VEL HORTENSE.

Field or garden pea.

2° PISUM SATIVUM ARVENSE *vel* HORTENSE.

PEAS SUITABLE FOR CULTIVATION EITHER IN THE FIELD OR GARDEN.

In this class are included such white-flowered peas, with white, green, or blue seeds, as may be grown in this country, either for their green or ripened seeds.

VARIETIES HAVING WHITISH COLOURED SEEDS.

10. Carolina.—Pods generally in pairs, two and a half to three inches long, by fully five-eighths of an inch broad, very slightly bent, well filled; pea from one-fourth to three-eighths of an inch in diameter, cream coloured, and perfectly round; in flower 10th June, ripe 8th August; height four feet; very prolific. 361

11. Charlton, Early.—Pods generally, but not always, in pairs, two and a-half to three inches long by one-half inch broad, well filled, and slightly bent; pea rather longer, but in other respects similar to the Double-Blossomed Early Frame; in flower June 3, ripe July 29; height four feet; prolific. This is the oldest, most extensively cultivated, and best known variety of White Pea, and is said by some to be the origin from which the most esteemed early garden varieties have arisen, and that they are nothing else than Charlton Peas, considerably modified in character, from the effects of cultivation, selection, &c. This idea does not at all seem improbable, when we take into consideration the susceptibility of change from cultivation, and other causes, which the pea is ascertained to possess. Thus, the Early Charlton, or any other variety whatever, if sown for several years, and only the very earliest and very latest flowering plants selected for seed each season, the difference in the time of ripening between the two will ultimately become so great as to give them the appearance of two distinct varieties; and by sowing the earlier portion on light early soils, and the later on strong black or carse soils, the difference will become materially increased. It is, therefore, probable, that the Early Frame Peas may have originated in the Charlton, although they differ essentially in their habit of growth. 362

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P. SATIVUM. ARV. VEL HORTENSE.

Field or garden pea.

363 **12. Dantzic.** — Pods in pairs, two and a-half inches long, by half an inch broad, compact, and slightly bent; smallest of all the white peas, quite round, of a bright yellow colour, beautifully transparent, with whitish eyes; in flower June 20, ripe August 29; straw branching six to seven feet high; medium prolific. It is to be regretted that this pretty pea is not more prolific; it is seldom cultivated in this country, but is grown extensively on the shores of the Baltic, and imported for splitting, or boiling whole.

364 **13. French, Small White or Yellow.**—Pods in pairs, small, well filled, and slightly bent, having long foot-stalks, and containing five to eight very small round white or yellowish coloured peas; straw of medium length, hard, slender, and rather sparingly clothed with foliage; seems rather late, not very prolific, and scarcely deserving of cultivation in this country.

365 **14. Prussian, White.**—Pods generally in pairs, two and a-half inches long, from one-half to five-eighths of an inch broad; straight, and well filled; peas fully one-fourth of an inch in diameter, cream coloured, round, and white, not wrinkled, but slightly compressed, from being closely set in the pod; in flower 15th June, ripe 15th August; height three to four feet; prolific.

366 **15. Sickle, White.**—Pods rather shorter, and more bent than those of the Scimitar, rather larger than, and similar in colour to, that of the White Prussian; in flower June 18, ripe August 20; height three to four feet; prolific.

VARIETIES HAVING WHITE-COLOURED FLOWERS, AND WHITISH SEEDS, WITH BLACK EYES.

367 **16. Large Egg, or Bean Pea.**—Pods in pairs, similar to those of the Spanish Moratto; pea much larger, more oblong or bean-shaped, and darker coloured; in flower 22nd June, ripe 30th August; from seven to eight feet high; medium crop.

468 **17. Pearl.**—Pods in pairs, two and a-half to three inches long, by one-half to five-eighths of an inch broad, slightly bent back, and well filled; pea scarcely one-fourth of an inch in diameter, of a dull whitish colour, quite round and compact; in flower 20th June, ripe 21st August; height six feet; very prolific.

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P. SATIVUM. ARV. VEL HORTENSE. Field or garden pea.

18. Spanish Moratto.—Pods in pairs, fully three inches long by five-eighths of an inch broad, slightly curved backwards, compact, and firm; pea rather larger than the Pearl, and of a dull white colour; in flower 26th June, ripe 29th August; height five to six feet; medium prolific. 369

VARIETIES HAVING BLUE OR GREENISH-COLOURED SEEDS.

19. Imperial, Dwarf Blue or Green.—Pods generally in pairs, tapering very abruptly at the point, slightly curved, two and a-half to three inches long, by five-eighths of an inch broad, rather compact and well filled than otherwise; pea nearly one-third of an inch in diameter, slightly compressed and wrinkled; colour light bluish green; in flower 16th June, ripe 18th August; height two to three feet; prolific. 370

20. Imperial, Tall Blue or Green—Pods about the same length and colour as those of the Dwarf Imperial, rather broader, more flattened, and generally straight; pea larger, more compressed, and irregularly shaped, but less wrinkled. In flower 19th June, ripe 24th August; height six feet; prolific. 371

21. Prussian, Blue.—Pods almost always in pairs, similar in size and shape to those of the White Prussian, rather larger, and more compressed; colour bluish green; in flower 16th June, ripe 18th August; height three to four feet; very prolific. The green straw, pods, &c. is, in this and all the other blue peas, of a darker colour than in the white ones; the colour of the straw varying (although not to the same extent), according to the colour of the ripe seed. 372

22. Scimitar, Blue.—Pods generally in pairs, length about three inches, breadth in the middle five-eighths of an inch, forming a gradual curve from the calyx to the point, slightly bent back at both ends, or of a scimitar-like shape, (hence the name); pea compressed and very small, wrinkled, or of a bean-like shape, greatest diameter more than one-third of an inch; colour light blue. In flower 16th June, ripe 18th August; height three feet; prolific. 373

The preceding list does not comprehend all the White or Green Peas which

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P. SATIVUM ARV. VEL HORTENSE. Field or garden pea.

may be found suitable for field culture in this country, but only a few of the best, the habits of which are such as to entitle them to general attention.

3° PISUM SATIVUM HORTENSE.

GARDEN PEAS.

P. SATIVUM HORTENSE. Garden pea.

The following varieties, although particularly adapted for garden culture, are not unsuitable for field cultivation, should such be accounted expedient, as in the case of growing them for seed.

DWARF VARIETIES NOT REQUIRING THE AID OF STAKES OR OTHER SUPPORT.

374 **23. Bishop's Early Dwarf.**—Pods single or in pairs, two inches long, bent back at both ends, increasing in size towards the middle, which is generally about half an inch broad; pea rather irregularly shaped, from one-fifth to one-fourth of an inch in diameter; cream-coloured, irregularly blotched with white, particularly about the eye and the junction of the cotyledons; in flower 31st May, ripe 26th July, height one foot; medium prolific. Found accidentally by Mr. Hamilton Bishop, market-gardener at New Scone, Perthshire, amongst a quantity of Early Peas.

375 **24. Brest, Early Dwarf.**—Pods single or in pairs, from one and a-half to two inches long, by half an inch broad, tapering from the middle to both ends, slightly bent; pea one-fourth of an inch in diameter, more round and regularly shaped than Bishop's Early Dwarf; in flower 16th June, ripe 30th July; height from one-half to one foot; unprolific.

376 **25. Groom's New Superb, or Blue Dwarf Pea.**—Pods single and in pairs, two and a-half inches long, compact, and terminating abruptly at both ends; peas a good deal larger than those of the Spanish Blue, of a white and light green, or mixed-like appearance; in flower 16th June, ripe 16th August; height one and a-half to two feet; medium prolific.

377 **26. Spanish, Blue Dwarf.**—Pods generally in pairs, about two inches long, by half an inch broad, a good deal bent back, or sabre-shaped; pea about five-

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P. SATIVUM HORTENSE. Garden pea.

eighths of an inch in diameter, colour dark bluish-green, light towards the eye, pretty regularly shaped; in flower 13th June, ripe 18th August; height one to two feet; prolific.

27. Spanish, Early Dwarf.—Pods single and in pairs, from two to two and a-half inches long by fully half an inch broad, broadest within half an inch of, and tapering abruptly towards, the point, and with a gradual curve to the calyx; peas rather larger, and more wrinkled than those of Bishop's Dwarf; colour similar; in flower 10th June, ripe 30th July; height one foot; medium prolific. 378

28. Spanish, Late Dwarf.—Differs little, in general appearance, from the Early Spanish, but is considerably later in ripening; in flower 16th June, ripe 14th August; height one foot; medium prolific. 379

VARIETIES REQUIRING THE AID OF RODS OR STAKES.

29. Crown White.—The name of Crown is applied to this sort from its producing all its flowers and pods in tufts or crowns on the extremity of the shoots; pods in pairs, small, cylindrical, and nearly straight, containing five or six medium sized peas of good quality; ripe about the same time as the Magnum Bonum; height about five feet; very prolific. Known, also, as American Crown, and Rose Crown. A few years ago a large and luxuriantly growing variety of this, raised by Mr. Downie of Appin, was brought into notice under the name of the New Tree Pea, but it has been lost, although, certainly, a very superior variety. 380

30. Early Frame Double-Blossom.—Pods almost always in pairs, slightly bent backwards, well filled, terminating rather abruptly at both ends; about two and a-half inches long by from three-eighths to half an inch in breadth; pea, when fully ripe, round and plump, cream-coloured, approaching to white towards the eye and at the junction of the cotyledons, almost one-fourth of an inch in diameter; in flower 31st May, ripe 25th July; height three to four feet; prolific. 381

31. Early Frame Single-Blossom.—This variety differs very little from the Double-Blossom, except in having its pods more generally single, and longer; 382

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P. SATIVUM HORTENSE.

Garden pea.

when two pods grow on the same foot-stalk, they are generally less than when one only is produced.

383 **32. Grotto, or Mossy-Podded.**—This is easily distinguished at first sight from all other peas by its pods, which are generally in pairs, straight, and above the middle size, having a rough, mossy, or warted-like appearance, which turns to a darker colour than the rest of the pod as it becomes ripe, especially if exposed to rain or damp weather; it is then easily partially rubbed off. Pea one-third of an inch in diameter, roundish, very slightly wrinkled, of a dirty-greenish colour, approaching to white at the eye when pulled ripe, which gives the sample rather a mixed appearance; in flower 28th June, ripe 27th August; five to six feet in height; very prolific.

384 **33. Hotspur, Early Golden.**—Pods generally in pairs, two and a-half to three inches long, by fully half an inch broad, nearly straight, well filled; pea similar to that of the Double-Blossom Early Frame, but rather larger; in flower 2nd June, ripe 27th July; height three to four feet; prolific. This variety is known also by the following names, which are derived from the places in which the seed stock has been previously cultivated, or other causes:—Reading Hotspur, Essex Hotspur, Master's Hotspur, and Superfine Early; any variation in all of which can only be attributed to causes attending their previous culture.

385 **34. Knight's Dwarf Groen Marrowfat.**—Pods in pairs, three inches long, by six-eighths of an inch broad, flattish, and very slightly bent; pea, which is a light bluish-green, differing only from the White Marrow in colour; in flower 26th June, ripe 29th August; height three feet; medium prolific.

386 **35. Knight's Dwarf White Marrow.**—Pods in pairs, from two and a-half to three inches long, by three-quarters of an inch broad, straight, or almost so, well filled, and terminating abruptly at both ends; pea, on an average, about three-eighths of an inch in diameter, flattened, and very much wrinkled; colour white, and sometimes of a greenish tinge; in flower 26th June, ripe 15th August; height three feet; prolific.

387 **36. Knight's Improved White Marrowfat.**—Pods always in pairs, similar

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P. SATIVUM HORTENSE. Garden pea.

to those of the Tall White variety; peas similar, but rather sweeter and more prolific; in flower 20th June, ripe 15th August; height six feet; very prolific.

388 **37. Knight's Tall Green Marrowfat.**—Pods rather less, but more compressed, than those of the Dwarf Green; pea similar in shape and colour; in flower 16th June, ripe 14th August; height six or seven feet; prolific. For the existence of the varieties bearing his name, the country is indebted to Mr. T. A. Knight, of Downton, who obtained them by crossing or hybridizing some of the most esteemed older varieties. From their remarkably wrinkled appearance, together with the peculiar sweetness which they all possess, Knight's Marrows may be said to form a distinct class of garden peas, possessing qualities which, together with their general productiveness, render them a valuable acquisition, both to cultivators and consumers.

389 **38. Knight's Tall White Marrowfat.**—Pods in pairs, large, and rather more bent than those of the Knight's Dwarf; peas exactly similar; in flower 24th June, ripe 18th August; height seven feet; prolific.

390 **39. Marrowfat, Dwarf.**—Pods rather flattened and inflated, sometimes in pairs, and sometimes single, about three inches long, by three-quarters of an inch broad at the middle, tapering from thence to both ends with a gradual curve, slightly bent backwards; pea cream-coloured and white, from one-fourth to three-eighths of an inch in diameter, slightly compressed and wrinkled; in flower 18th June, ripe 16th August; height three to four feet; prolific.

391 **40. Marrowfat, Early Green.**—Pods generally in pairs, well filled, slightly bent back at both ends, from two and a-half to three inches long, by fully half an inch broad; peas slightly compressed, not much wrinkled, approaching to a cream-colour when very ripe; those in the pods, nearest the top of the straw, which are latest in ripening, are of a light green colour, which gives to the sample a mixed-like appearance, similar to those of the Matchless Marrowfat; in flower 10th June, ripe 30th July; height four feet; prolific.

392 **41. Marrowfat, French.**—Pods generally single, three to three and a-half inches long, by six-eighths of an inch broad, much inflated, nearly straight;

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P. SATIVUM HORTENSE. Garden pea.

peas white, but greenish when not fully ripe, about one-third of an inch in diameter, slightly wrinkled, sample mixed-like; in flower 16th June, ripe 14th August; height three to four feet; prolific.

393 **42. Marrowfat, Late Green.**—Pods rather shorter, broader, and not so well filled as the Early; peas larger and more wrinkled; similar in other respects; in flower 16th June, ripe 15th August; height four to five feet; medium prolific.

394 **43. Marrowfat, Matchless.**—Pods single and in pairs, about three inches long, by five-eighths of an inch broad, nearly straight, and well-filled; pea fully one-third of an inch in diameter, compressed, and slightly wrinkled; sample, when not very well ripened, possessing a greenish tinge; in flower 16th June, ripe 18th August; height three to four feet; very prolific, and of superior quality.

395 **44. Marrowfat, Tall.**—Pods not so often in pairs as those of the Dwarf, straight, and terminating more abruptly, three to three and a-half inches in length, by three quarters of an inch in breadth; pea same colour, and rather longer than the Dwarf; in flower 16th June, ripe 15th August; height six to seven feet; prolific.

396 **45. Magnum Bonum.**—Pods in pairs, about three inches long by five-eighths of an inch broad, straight, compact, terminating abruptly at the point, and gradually at the calyx; pea fully three-eighths of an inch in diameter, irregularly shaped, but not wrinkled, of a deep cream-colour, occasionally very slightly tinged with green; in flower 16th June, ripe 14th August; height six to seven feet; prolific.

397 **46. Marquis of Hastings.**—Pods generally in pairs, three inches long by fully five-eighths of an inch broad, slightly flattened; peas more than three-eighths of an inch in diameter, irregularly white and cream-coloured; in flower 26th June, ripe 16th August; four to five feet high; very prolific.

398 **47. Nimble.**—This is another name for a variety of Double-Blossom Early Frame; it is, however, questionable if any real difference does exist; at all events, it is not so distinct even as the Warwick, and, at the furthest, can only be attributed to previous cultivation.

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P. SATIVUM HORTENSE. Garden pea.

48. Prolific, Dwarf.—Pods rather smaller than those of the Royal Dwarf; peas also smaller and whiter; in flower 16th June, ripe 14th August; height two to three feet; very prolific. 399

49. Rouncivelle, White.—Pods generally in pairs, large, broad, a little flattened, and nearly straight, containing seven or eight peas, which are large, irregularly shaped, and white coloured; in flower 20th June, ripe 18th August; height six feet. 400

50. Royal Dwarf.—Pods generally in pairs, straight, three inches long, by five-eighths of an inch broad; pea light cream-coloured, fully a quarter of an inch in diameter, occasionally slightly compressed in the sides, arising from their growing very close in the pods; in flower 13th June, ripe 10th August; height two to three feet; prolific. 401

51. Warwick, Early.—Pods sometimes in pairs and sometimes single, about the same breadth, rather shorter and more straight than those of the Double-Blossom Early Frame; in flower 31st May, ripe 25th July; height three feet; medium prolific. This variety has acquired the character of being the earliest of all the varieties of garden peas, and on this account has been much sought after by cultivators; but the result of our experiments prove it to be no earlier than either of the varieties of Early Frame, while it is, certainly, less productive than either. 402

52. Waterloo.—Pods in pairs, from two and a-half to three inches long, by fully half an inch broad; pea one-third of an inch in diameter, round, or very slightly compressed, and wrinkled; whitish towards the eye, the rest cream-coloured or greenish, according to their respective degrees of ripeness. Sample on this account appears mixed. In flower 16th June, ripe 15th August; height four to five feet; very prolific. 403

53. Wellington.—Pods in pairs, three and a-half inches long by three-quarters broad, well filled, very slightly bent back; pea rather oblong or bean-shaped, not wrinkled; cream-coloured; largest of all the White peas; in flower 18th June, ripe 20th August; height four to five feet; very prolific. 404

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P. SATIVUM HORTENSE.

Garden pea.

405 **54. Woodford's Green Marrow.**—Pods generally in pairs, three to three and a-half inches long, by half an inch broad; almost straight; peas fully one-fourth of an inch in diameter, almost round, or very slightly compressed on the sides; colour darker green than any other variety whatever; in flower 16th June, ripe 17th August; height two to three feet; very prolific, but rather a coarse pea. This pea is sometimes called Nonpareil.

P. SATIVUM SACCHARATUM.

Eatable podded pea.

4° PISUM SATIVUM SACCHARATUM.

EATABLE PODDED, SUGAR, OR SKINLESS PEAS.

All these varieties want the tough inner film or endocarp, and on that account used with the green pods entire, in the same manner as kidney-beans, but they may also be used as other peas, either green or ripe. Before ripening, the pods of some of the varieties have the appearance of being much swollen or distended with air, but afterwards they become shrunk, and collapse closely on the seeds.

WHITE FLOWERED.

406 **55. Common Dwarf Crooked.**—Pods three inches long by five-eighths of an inch broad, crooked or jointed-like, with the seeds, as in all the Sugar Peas, very prominent, especially on becoming ripe and dry; peas fully one-fourth of an inch in diameter, white, and slightly wrinkled; in flower 19th June, ripe 13th August; height two feet; prolific.

407 **56. Common Tall Crooked.**—Pods rather longer than those of the Common Dwarf; peas longer, darker coloured, and more irregularly shaped; in flower 16th June, ripe 17th August; height four to five feet; prolific.

408 **57. Dutch Dwarf.**—Pods small, cylindrical, and nearly straight, containing five or six peas, of good quality, and not very prolific. About the same height and as early as the Early Frame, but not so hardy.

409 **58. Late Dwarf Tamarind.**—Differs from the Common in being from a week to a fortnight longer in ripening; is also of a more broad-leaved luxuriant-like habit of growth, and produces larger pods.

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P. SATIVUM SACCHARATUM.

Eatable podded pea.

59. Vilmorin's.—Pods small, well filled, and straight, containing seven or eight peas, which appear very prominent, even in the young pods; height five to six feet; rather late; said to be of excellent quality, and the most abundant bearer amongst all the white eatable-podded peas. Known in France as *Espèce de Pois très excellent.* 410

60. Late Wyker.—This variety bears a considerable resemblance to Vilmorin's, but is taller, and later in ripening. 411

RED OR PURPLE FLOWERED.

61. Tall, or French Imperial.—Pods single, about seven inches long by one inch broad, inflated and slightly bent, afterwards becoming very much shrunk and crooked; blossoms reddish, like those of the Common Field Pea; peas fully one-third of an inch in diameter, compressed or slightly wrinkled, of a dun-greyish colour; sown 27th March, in flower 26th June, ripe 6th September; height five to six feet. 412

62. Red, or Purple American.—This differs from the Common Red American in its pods wanting the endocarp, and the peas appearing more prominently through the skin. 413

63. Fishamend's.—This variety is a good deal like the Tall, or French Imperial, but its seeds are much smaller, and more compact; a good bearer, and, in France, much esteemed for its pods when young. 414

64. White Podded.—Average height from five to six feet; pods whitish, irregularly shaped when full grown, and composed of a thick fleshy skin without endocarp; peas of largish size, and light dun colour, slightly speckled, and forming a superior sample. Although somewhat early and fully more than usually prolific, this sort is never likely to be much grown as a field pea, the want of the endocarp rendering the pods easily broken in harvesting, and it is also inferior in quality for culinary purposes to the sugar or skinless peas usually grown. 415

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P. SATIVUM ARVENSE.

Field pea.

PISUM SATIVUM ARVENSE.

The two following varieties were accidentally omitted at page 119 —

416 **Grey Dantzic.**—This name has been applied to a small round dark grey seeded variety, imported from the Baltic, which in appearance of sample very much resembles large tares; but nothing farther is as yet known of its characteristics or merits.

417 **Himalayan, Small Grey.**—Straw from eighteen inches to two feet in length, weak and straggling; blossoms always solitary; pods generally under an inch and a-half in length, well filled, curved or scimitar-shaped, and usually containing five or six peas, which are, when ripe, of a dull greenish colour, speckled with brown, and not larger than common tares or vetches. In our Collection, containing seventy-three sorts of field and garden peas, this was found to be the earliest, smallest seeded, and the least productive. Its seeds were sent from the Himalaya by the Hon. W. Leslie Melville, under the name of Kullaoo, and being from a district of Asia which is supposed to have produced many others of our most useful cultivated plants, it is not improbable but that it may be the origin from which all the improved varieties of the pea at present in cultivation have been derived.

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IV. ERVUM.* (*Linn.*)

ERVUM.

1° ERVUM LENS.

Ervum lens.

Belonging to Class Exogens or Dicotyledons; Royal Alliance of Lindley; Natural Order, Fabaceæ; Linn. Cl. 17, *Ord.* 4.

English—LENTIL. | *French*—LENTILLE. | *Hebrew*—ADASHIM.

"Then Jacob gave Esau bread and pottage of lentils; and he did eat and drink, and rose up and went his way: thus Esau despised his birthright.—GENESIS XXV. 34.

Early use of the lentil.

CONSIDERABLE interest is attached to this plant from its Scriptural allusions and great antiquity as food for man. It was in esteem in the days of the patriarchs, and is much prized at the present day. It is by far the smallest cultivated legume, rarely growing above two feet in height. The quotation at the head, our readers are aware, has reference to the *red* mess of pottage for which Esau sold his birthright. The pottage, however, formed by the lentil is not red, in the modern sense of the term; and Dr. Royle, quoting Rosenmuller, accounts for this by stating that the Easterns called *red* that which, strictly speaking, is a yellowish brown, in the same manner as we speak of red leaves and red cattle.

Its cultivation in Britain.

The lentil is said to have been first introduced into Britain about the year 1545, but although well adapted to our climate, its cultivation has never been attended to. A recent attempt to bring it into notice in Scotland, as a field crop, will be found noticed in the Introduction, page 14. In France, Germany, Holland, and other countries of the continent, it is grown to a considerable extent for its seeds and haulm. The former are round and flat, produced in great abundance in small, flat, square-like pods, generally two on each foot-stalk, and

* From the Celtic *erw*, tilled land, according to Paxton, but this is doubtful.

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Ervum. Lentil.

one or two seeds in each pod; they are used in various ways, but principally, when ripe, in soups, as split peas; and the haulm is considered, both in a green and a dry state, so nutritious as to compensate for its small bulk of produce, and particularly well adapted for feeding calves and other young stock. When given as green food for cattle, it should be cut when the first pods are nearly full grown; and in this case it is generally sown broadcast, but drilled when grown for ripe seeds. The soil best adapted for the lentil is that of a dry, light, calcareous, sandy nature, being very impatient of wet.

418 **1. Common, or Yellow.**—This differs from the large variety in having smaller seeds, and being considered of a superior quality. It is the sort most esteemed in the Paris market.

419 **2. Large.**—Pods, when ripe, about three-fourths of an inch in length, by one-half in breadth, flattened, and containing generally only one seed, which is round and compressed, about three-eighths of an inch in diameter, and about one-eighth in thickness, of a whitish or cream-colour.

420 **3. Red.**—Seeds of a reddish brown, about the same size as those of the Common, and nearly as early in ripening.

421 **4. Small.**—Seeds not much more than one-eighth of an inch in diameter; flowers reddish, and pods often containing two seeds. This is the variety mostly sown for green food in France, although its ripe seeds are also used. It is rather later, and grows taller than any of the preceding.

2° ERVUM MONANTHOS.

ONE-FLOWERED LENTIL.

422 This differs essentially from the other lentils; its seeds are from one-eighth to two-eighths of an inch in diameter, globular, but often slightly wrinkled, of a dunnish-brown colour, and generally three or four in each pod. It is much less esteemed than the varieties of *E. lens*, but is, notwithstanding, cultivated in some parts of France, and elsewhere, both for its seeds and herbage or haulm.

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V. CICER.* *(Tourn.)*

Belonging to Class Exogens, or Dicotyledons; Rosal Alliance of Lindley; Natural Order, Fabaceæ; Linn. Cl. 17, *Ord.* 4.

CICER ARIETINUM.†

C. ARIETINUM.
Chick Pea.
423

CHICK PEA.

1. Chick Pea.—A native of the south of Europe, as also of the north of Africa, and some parts of Asia. In countries where the winters are not very severe, the Chick Pea is sown in autumn, but our experience has proved that it is alike too tender to endure the rigour of our winters, and scarcely arrives at maturity during our summer; consequently, quite unsuitable for field culture in this country. The plant is of a stiff, branching, upright habit of growth, one and a-half to two feet high, producing small red or white inconspicuous flowers, which are followed by swollen or bladder-like pods, about an inch in length, by three-fourths of an inch in diameter, containing three or four seeds of a whitish colour, about the size of common peas, globular, and irregularly indented or wrinkled on the surface. The Chick Pea, when roasted, closely resembles coffee, and is often used as a substitute for it in Italy and the south of France.

* From *kykis*, force or strength, in reference to its qualities.

† The specific name *arietinum*, is from the fancied resemblance of the pods to a ram's head.

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SECT. III.—BUCKWHEAT.

POLY-GONUM. Buckwheat.

POLYGONUM.* *(Linn.)*

Belonging to Class Exogens or Dicotyledons; Silenal Alliance of Lindley; Natural Order, Polygonaceæ; Linn. Cl. 8, Ord. 3.

English—Buckwheat. | *German*—Buckweizen. | *Spanish*—Trigo Saraceno.
French—Ble Sarrasin. | *Italian*—Grano Saraceno. | *Polish*—Tatarca, Gryka.

BUCKWHEAT is supposed to be a native of Asia, and has been cultivated in this country since the commencement of the seventeenth century, principally as food for pheasants and domestic poultry.

1° POLYGONUM FAGOPYRUM.

P. FAGOPYRUM. 424

1. Common Buckwheat.—Although seldom cultivated in Scotland, except for feeding pheasants and other game, on the Continent, and even in some parts of England, it is used in the distillery, and its flour made into bread. In France, besides being used for feeding fowls, pigs, &c., it is given to horses, and it is said that a bushel of its grain goes further than two bushels of oats, and, if mixed with four times its bulk of bran, will be full feeding for any horse for a week. Its haulm or straw is said to be more nourishing than that of clover, and its beautiful pink or reddish blossoms form a rich repast for bees.

2° POLYGONUM TATARICUM.

P. TATARICUM. 425

2. Tartarian Buckwheat.—This sort differs from the former in having the edges of its seeds toothed, and being of a slenderer but taller habit of growth. It is not considered so productive, but is more hardy, and better adapted for growing in mountainous situations.

* From *poly*, many, and *konu*, a knee, in reference to the numerous joints of the stem.

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3° POLYGONUM EMARGINATUM.

P. EMARGINATUM. Buckwheat. 426

3. Notch-Seeded Buckwheat.—Seeds much larger than the Common Buckwheat, their wings also larger and notched. Native of Nepaul, where it is cultivated; but, when grown in our climate, a considerable number of its flowers are generally abortive.

4° POLYGONUM CYMOSUM.

P. CYMOSUM. 427

4. Perennial Buckwheat.—The seeds are larger, thicker skinned, more winged and flattened on the sides than those of the Common Buckwheat.

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SECT. IV.—CHENOPODIUM.*

GOOSEFOOT.

Belonging to Class Exogens, or Dicotyledons; Chenopodal Alliance of Lindley; Natural Order, Chenopodiaceæ; Linn.Cl. 5, Ord. 2.

C. Quinoa. Goosefoot.

CHENOPODIUM QUINOA.

IN Mexico, this plant ranks in utility next to the potato, maise, and wheat; the leaves being used as greens, and the seeds in soups, or eaten as rice. The seed of two varieties (white and black seeded), were presented to us, in 1835, by the late Mr. Loudon.

428 **1. White Seeded.**—Sown at the end of April. The plants grew to the height of about four feet, producing short and compactly placed branches, and an abundance of succulent foliage, which was found an excellent substitute for spinach. In the first week of October, the plants being ripe, were cut up, and on being dried, the seed was rubbed out, and weighed exactly four pounds and two ounces, besides what was eaten by birds and lost from various causes.

429 **2. Red Seeded.**—Very distinct from the former. Grows to the height of six or eight feet, and even more, with numerous long and spreading branches, producing a greater abundance of succulent foliage than the former, but from its lateness it seems wholly unfitted for cultivating for its seeds in this climate.

END OF FIRST DIVISION.

* From *chen*, a goose, and *pous*, a foot; in consequence of some of the species having leaves bearing a resemblance to the webbed feet of the goose.

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DIVISION II.

PLANTS CULTIVATED FOR THEIR HERBAGE AND FORAGE.

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SECT. I.—GRAMINEOUS HERBAGE & FORAGE PLANTS.

Introductory Remarks.

THE Culture of Plants for the food of domestic herbivorous animals, has always been confined to nations distinguished by advancement in the practice of agriculture, and the other arts attendant on civilization: thus, we find that branch of husbandry to have been successfully practised by the Romans in the first century; and in the sixteenth, it was carried on extensively in the Low Countries, then alike famous for agriculture, manufactures, and commerce; whence it was, about the middle of the seventeenth century, introduced to Britain, where its practice may be said to have served as an index to determine the progressive advancement of agriculture from that to the present time.

Early Ages.

Although the Egyptians, Jews, Greeks, and other eminent nations of antiquity, bestowed considerable care on the culture of the cereal grains, pulse, flax, and various other plants, the products of which conduced to the alleviation of their personal wants, by affording either food or clothing; and although among many of those nations, the possession of flocks and herds was deemed indicative both of power and honour, yet it does not appear that the cultivation of plants, for the exclusive purpose of feeding these, was practised prior to the period when Rome swayed the sceptre over the greater part of the then known world,—when her warriors and senators enjoyed, in the culture of their lands, relaxation from the dangers of the battle-field, or the cares of the state;

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Culture of Lucern, &c. by the Romans.

and when, according to an eminent agricultural writer of that age, "the earth delighted to be ploughed with a share adorned with laurels, and by a ploughman who had been honoured with a triumph." Then, in the times which immediately preceded the decline of that mighty empire, the Romans not only grew wheat (far or spelt), barley, beans, &c., for bread, but they also cultivated lucern, red-clover, vetches, lupines, fenugreek, and other leguminous plants, which they used both in a green and dried state for feeding their live stock, and for a like purpose they also employed the turnip and rape; while their horses and working oxen were further regaled with the ripened seeds of the cerealia, as well as those of the bean, pea, and other leguminosæ. But throughout the barbarous ages which succeeded the ruin of the Roman empire, it may, in the absence of any definite information, be safely inferred, that, with the decline of agriculture and the useful arts generally, that portion in the practice of the former, which alone tended to supply the wants of the domestic animals, was the first to fall into disuse; and if the growth of clover, lucern, &c., was at all continued, it must have been so to a very limited extent, and that most likely confined to the countries where their usefulness was formerly most generally appreciated.

England, 16th and 17th Centuries.

Summer and Winter Tares.

In England, while hemp, flax, hops, and buckwheat, in addition to common wheat, rye, and barley, were, in the sixteenth century, reckoned common crops; yet the cultivation of forage or herbage plants was only commenced about the middle of the seventeenth century, with the exception of summer* and winter† tares or vetches, which are mentioned by the earliest writers on agriculture. John Gerarde, a famous herbalist, surgeon, and traveller, of the days of Queen Elizabeth, states, in his "General History of Plants," published in 1597, that "the red clover was sown in the fields of the Low Countries, in Italy, and divers other places beyond the seas," but makes no mention of its being then known in England; and Sir Richard Weston, who, in 1645, published his "Travels in Flanders," mentions that, in the preceding year, he saw a crop of it cut three times in the course of the summer, in the vicinity of Antwerp; and immediately thereafter, seeds of the "Great Clover of Flanders"‡ were advertised "to be had at the shop of James Long, at the Barge on Billings-

Red Clover.

* Vicia sativa *æstiva*. † Vicia sativa *hyberna*. ‡ Trifolium pratense.

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gate." In 1653, Walter Blyth, an agricultural writer, was the first to publish particular directions as to its culture; so that the merit of its primary introduction to England is generally ascribed to Sir Richard Weston, who is also believed to have first introduced, from the same country, the field-culture of turnips, on his return in 1645. Sainfoin*, or, as it was first named, French finger-grass, seems next to have claimed attention, being introduced from France in 1651. Sainfoin.

According to Miller, author of the "Gardener's Dictionary," lucern† was also brought to England, from the same country, in 1657. Lucern.

And Hartlib, in his "Complete Husbandman," published in 1659, recommends the sowing of nonsuch‡ or yellow clover, under the name of hop-trefoil, from having seen a chalky down in Kent, without any other than a scanty vegetation of this plant, "maintaining many great sheep and very lusty, so that they were even fit for the butcher." Nonsuch or Trefoil.

The seventeenth century is further distinguished in the annals of Husbandry, by the first cultivation of any of the true grasses for hay or pasture, which is thus recorded in Dr. Plot's "Oxfordshire," published in 1677: "They have lately sown ray-grass§, or the *Gramen loliaceum*, by which they improve any cold, sour, clay-weeping ground, for which it is best, but good also for drier upland grounds, especially light, stony, or sandy land, which is unfit for sainfoin. It was first sown in the Chiltern parts of Oxfordshire, and since brought nearer Oxford by one Eustace, an ingenious husbandman of Islip, who, though at first laughed at, has since been followed even by those very persons that scorned his experiments." Rye-Grass.

Succeeding writers, however, do not fail to condemn the rye-grass as an impoverisher of the soil, while they affirmed that its hay was not to be compared to that of clover or sainfoin: the former of which seems alone to have had any particular attention bestowed upon it till the following century. Ray, in his "History of Plants," published in 1688, mentions that the yellow melilot‖ was then sometimes sown for the food of kine and horses; but succeeding writers generally include it among agricultural weeds. And lucern, although introduced, was scarcely, if at all, subjected to field-culture prior to the seventeenth century. Yellow Melilot.

* Onobrychis sativa. † Medicago sativa. ‡ Medicago lupulina.
§ Lolium perenne. ‖ Melilotis officinalis.

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Cow-Grass.

White Clover.

Parsley.

Mustard.

Whin or Furze.

Wild Tare.

Bird's-foot Trefoil.

Spurry.

Mr. Lisle, author of "Observations on Husbandry," written in 1707, states, "that, then, clover was commonly cultivated in Wiltshire, Hampshire, Gloucestershire, Leicestershire, &c.; also that of late years the cow-grass* had obtained some credit as a longer-lived sort than the common clover;" and he further mentions that a neighbour in Hampshire had "sowed the wild white clover† which holds the ground and decays not," the seeds of which he received from Sussex, where its culture was then practised. J. Mortimer, who, in 1721, published his "Whole Art of Husbandry," relates that "in Buckinghamshire they make great improvement of their lands by sowing them with parsley‡, which prevents the rot of sheep;" and that "one in the hundreds of Essex made a great improvement of some land by sowing of it with mustard-seed§ for the same purpose."

The next novelty in English field-culture seems to have been the whin, as appears by a letter from Colonel Charles Cathcart to the Scottish Society for Improving in the Knowledge of Agriculture, dated London, 6th April, 1725, in which he mentions that "The sowing of whins‖ for feeding of cattle, takes mightily about London now;" and that "this improvement comes from Wales, where it has been practised these hundred years." In 1744, William Ellis, a Herefordshire farmer, published his "Modern Husbandman," in which he claims the merit of introducing the culture of the "wild thetch-grass¶" or mouse-tare, and the "lady finger-grass**" or bird's-foot trefoil, which he "affirms for truth are the two best sorts of natural meadow-grasses that are for feeding and fattening of conies, deer, race-horses, or any other sort of cattle that will eat them in grass or hay;" and adds, that "if gentlemen knew the value of them they would have no occasion for searching after a foreign spurry†† seed, which I have experienced exceeds all others for its worthless nature;" from which, and other passages, it appears that the culture of spurry was introduced from Holland about 1740. And the same author mentions, that he "had heard of a gentleman in a distant country who had sowed the plantain-seed" or rib-grass‡‡ but was unable to state the results; which seems the first

* Trifolium pratense *perenne*. † Trifolium repens. ‡ Petroselinum sativum.
§ Sinapis (species unascertained). ‖ Ulex europæus. ¶ Ervum hirsutum.
** Lotus corniculatus. †† Spergula arvensis. ‡‡ Plantago lanceolata.

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notice taken by English writers of a plant, that afterwards received much more attention, than, in the present opinion of Agriculturists, its merits ever deserved. In the "Farmer's Complete Guide," published in 1760, attention is directed to the "new lucerne" or sickle-podded medick*, which the writer states to be "a native of Herefordshire and the adjoining counties, but where it is by no means common;" and further adds, that "the Swedes derive great advantages from its culture." Succeeding authors relate that burnet† was first grown as a field plant in 1760 or 1761, by Mr. B. Rocque, of Walham-Green, at the suggestion of Mr. Peter Wyche, to whom belongs the merit of introducing from America, about that time, the timothy-grass‡, first so named in Carolina, from having been taken to that State by a Mr. Timothy Hanson; from which country the culture of the orchard-grass or cock's-foot§ was also introduced shortly afterwards; the same Mr. Rocque having grown it in 1764.

Yellow Flowered Lucern.

Burnet.

Timothy-grass.

Cock's-foot Grass.

From the preceding, it will be observed with what avidity the earlier cultivators sought out herbage and forage "grasses," as they termed them, among the leguminosæ and other collaceous plants, and with what seeming care they eschewed the true grasses; their often-repeated reason for which was, that "these produced many small hair-like roots which filled the soil, and, therefore, could not be but very impoverishing and hurtful thereto;" without considering that the then very common practice of cropping a field, as long as it would recompense their labours, and afterwards letting it alone for some years to recover under a crop of unsown grass, was of itself a perfect contradiction to their false theory.

As an approximation, however, to a more improved system, some recommended sowing, along with the clovers for permanent pasture, seeds shaken out of the best natural meadow-hay; without considering that, as the different species composing such hay did not ripen their seeds simultaneously, only a partial reproduction of these species could be expected. By the recommendations of Stillingfleet in 1759, and others immediately thereafter, to cultivate certain of the most useful grasses, as the crested dog's-tail, sweet vernal, meadow fox-tail, meadow fescue, sheep's fescue, rough and smooth-

Hay-seeds.

* Medicago falcata. † Poterium Sanguisorba. ‡ Phleum pratense. § Dactylis glomerata.

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stalked meadow-grasses, &c., by growing their seeds separately; and the successful introduction from America of the timothy and cock's-foot, directed the attention of practical agriculturists to a new source whence to procure a further accession to their hay and pasture plants; and likewise suggested to agricultural writers the expediency of adopting different terms to distinguish between the clovers and true grasses. Accordingly, we find that, after that period, they generally denominate the former *artificial grasses*, and the latter *natural grasses*.

Crested Dog's-tail.

Creeping Bent Grass.

Fine Bent.

Sheep's Fescue.

Everlasting Pea.

In 1761, Mr. Aldworth of Stanslake, collected, at the suggestion of Mr. Stillingfleet, fully a bushel of the seed of the crested dog's-tail grass*; and that author mentions having himself "procured a sufficiency of the same seed, as well as that of the creeping bent†, fine bent‡, sheep's fescue§, &c., to begin a stock with." And in the same year, the broad-leaved everlasting pea‖ was grown by a gentleman who, in the "Museum Rusticum" (published in 1765), states that he then sowed a rood of it, which yielded a great deal of feed much relished, both in a green and dried state, by horses and cattle." In 1776, a prize of 5*l.* was awarded by the London Society for the Encouragement of Arts, Manufactures, and Commerce, to Mr. W. Judge, Widford, Essex, "for gathering by the hand the seeds of meadow-fox-tail¶ grass;" as also 5*l.* and 3*l.* 3*s.* to Mr. E. Birch, Somerset, and William Gosse, Hants, for collecting, in like manner, the seeds of crested dog's-tail grass; and in the following year Mr. Gosse received two further premiums for gathering seeds of the meadow-fescue** and sweet vernal grasses††. The same Society, in 1768, offered a premium of 10*l.* "for the greatest quantity of land (not less than one acre) of vernal grass-seed, sown in drills;" and their gold medal was further offered, in 1769, "to the person who should give the most satisfactory account of the different properties and comparative value of any two or more of the several natural grasses."

Meadow-Fox-tail.

Meadow Fescue.

Sweet Vernal Grass.

Yarrow or Milfoil.

By earlier authors, yarrow or milfoil‡‡ was generally included among pernicious weeds; but a writer in the "De Re Rustica," published in 1769,

* Cynosurus cristatus. † Agrostis stolonifera. ‡ Agrostis vulgaris.
§ Festuca ovina. ‖ Lathyrus latifolius. ¶ Alopecurus pratensis.
** Festuca pratensis. †† Anthoxanthum odoratum. ‡‡ Achillea Millefolium.

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strongly recommends the sowing of it in sheep pastures. And about 1780, Mr. Boys, a farmer of high reputation in Kent commenced the culture of the rough-stalked meadow-grass*; having had, in 1785, from twenty to thirty bushels of its seed for sale, which he offered at 3s. per pound; but was obliged to drop its culture from want of demand. Marshall, in his Rural Economy of Yorkshire, published in 1788, states, that "white or meadow soft grass," now better known by the name of Yorkshire fog†, "was formerly in high esteem, being cultivated separately, and thrashed like corn for its seeds; but it was far from being an eligible grass for cultivation, the growers of the seeds being the only persons who profit thereby, eighty bushels per acre having been produced." But at what period it may have been first cultivated is not recorded. In the last quarter of the same century, the only other introduction of importance seems to have been the chiccory or succory‡ from France, in 1788, by Arthur Young; for though the further cultivation of the natural grasses was strenuously advocated by many able authors, as Curtis, Lord Kames, Dr. Anderson, Martin, and Nodder, in their "Flora Rustica," Young, &c., as well as by contributors to agricultural periodicals, yet comparatively little attention seems to have been bestowed on testing their actual merits by field culture.

Rough-stalked Meadow-Grass.

Yorkshire Fog.

Chiccory.

In Scotland, the cultivation of the artificial grasses was much later of being resorted to than in England. The date of the first introduction of red clover§ into Scottish husbandry is not ascertained, but is supposed to have been early in the eighteenth century. In a treatise by the Honourable Society for improving in the Knowledge of Agriculture, "published for the benefit of the farmers of that kingdom," in 1724, it is stated that "the people of this country have of late years begun to follow the practice of sowing grass seeds," of which the writer enumerates the red clover, rye-grass, and hop-clover or trefoil¶; and recommends, with all or any of the above-mentioned grass seeds, to sow the seeds of good upland or lea hay, particularly the corn grasses of all kinds; as also the white clover**, and narrow-leaved plantain"

Red Clover.

Rye-Grass.

Hop Clover or Trefoil.

White Clover.

* Poa trivalis. † Holcus lanatus. ‡ Cichorium Intybus. § Trifolium pratense.
‖ Lolium perenne. ¶ Medicago lupulina. ** Trifolium repens.

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Rib-grass.

or rib grass*. Thomas, the sixth Earl of Haddington, and Mr. Cockburn of Ormiston, are supposed to have been the first who cultivated red clover in East Lothian, and that between 1720 and 1730; but even in 1740 the practice had made little advancement. Lord Cathcart, one of the most eminently early improvers, is believed to have introduced the practice into the western counties; he having, in 1733, granted thirty-one years tacks to his tenants on the baronies of Auchencross and Cathcart, and within the three following years to those in the lands of Craighall, Layland, and parish of Maybole, one of the conditions of which was, that they should be "obliged to sow ten pounds of red clover seed, for an experiment, on half an acre of the first break of their crofting which falls to be grass." Red clover is also reported to have been first sown in Forfarshire in 1755, by a farmer in the parish of Logie Pert, and in Kincardineshire about 1760; while in most northern counties it seems to have been little known, even towards the end of that century. In 1730, Sir William Nicolson, Bart., of Glenbervie, Kincardineshire, by sowing seeds collected promiscuously from natural meadow-hay, among the third or fourth successive crops of oats after lea, was the first in the district of Mearns to make an innovation on the old practice of leaving the land, after being cropped out, to renew its herbage without artificial aid. Sainfoin† and lucern‡, having, at an early period, attracted a good deal of attention among English growers, it was not to have been expected that they should be entirely overlooked even in this less favourable climate. Accordingly, we find, in the Select Transactions of the afore-mentioned Society, published in 1743, that the Earl of Stair had, for several preceding years, cultivated both, at New Liston, in West Lothian; and the same nobleman is further stated in that work to have "made noble examples, both in Lothian and Galloway, in the practice of turnip, cabbage, and carrot husbandry, by the plough." About the year 1765 to 1770, the sowing of rye-grass, red, white, and yellow clover, with the occasional addition of rib-grass, seems to have become pretty general in the best cultivated districts of Scotland. In 1773, the red or creeping-rooted§ and sheep's fescue‖ grasses were grown by Dr. Anderson; and about

Sainfoin. Lucern.

Red Fescue. Sheep's Fescue.

* Plantago lanceolata. † Onobrychis sativa. ‡ Medicago sativa. § Festuca rubra. ‖ Festuca ovina.

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the same period, or shortly after, the then proprietor of Glammis Castle, in Forfarshire, with the view of improving the pasturage about that ancient residence, had the parks sown down to permanent grass, with seeds saved promiscuously from hay grown in some of the richest meadows in Yorkshire; and to this day the beneficial effects of the experiment are still evident, and no less striking to the botanist than to the grazier, from the prevalence of *Avena flavescens* and other grasses rarely met with in the surrounding country. Towards the end of the century, the fescues and several others of the permanent natural grasses, as timothy, cock's-foot, Yorkshire fog, &c., began to receive a little attention, arising from the favourably reported results attendant on their culture in the south, and the persevering advocation of their merits, both by agricultural and botanical writers.

Since the commencement of the present century, the increased facilities for communication and conveyance have removed the obstacles which formerly limited, for a considerable period at least, the adoption of any new practice or mode of culture to the district in which it might have been originated; so that improvements in Scotland, England, and Ireland, may now be said to go on simultaneously; and therefore, as further separate notices of the introduction of plants to these countries would merely be a repetition of dates, in the following paragraph the most deserving additions which have been made within the past forty years are recorded in their order of priority, without regard to classification under the heads of the different countries, as in those preceding.

Hard Fescue. Smooth Meadow-Grass.

The hard fescue* and smooth-stalked meadow-grasses†, if not cultivated before the end of the eighteenth century, appear at least to have had a little attention bestowed upon them very early in the present, although the exact period, or by whom, has not been ascertained. In 1807, Dr. Richardson, of Portrush, Ireland, created a considerable sensation among agriculturists by the introduction of the famous fiorin grass‡, which, as stated at page 8, was cultivated more than forty years before by Stillingfleet, who, in succeeding works of his, endeavoured to impress upon growers the advantages of cultivating it

Fiorin or Creeping Bent.

* Festuca duriuscula. † Poa pratensis. ‡ Agrostis stolonifera.

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along with the "float-fescue, on moist meadow lands," seemingly, however, with very little effect; so that to Dr. Richardson belongs the merit of first acquiring for the fiorin a fair and general trial. About 1820, an extensive set of experiments with grasses, including many exotic as well as native sorts not previously cultivated, was instituted at Woburn Abbey, under the direction of the late Duke of Bedford; the results of which are recorded by the late Mr. George Sinclair, then gardener to his Grace, in his invaluable "Hortus Gramineus Woburnensis," which work may justly be said to have first directed that general attention to the cultivation of useful grasses, so long and unaccountably withheld.

Woburn Grass Garden.

Crimson Clover.

In 1821, the crimson clover* was brought into notice by the late Sir John Sinclair, Bart., and grown in Berwickshire that same year: three years afterwards it was introduced into England, on a much more extended scale, by Mr. John Ellman, jun., of Southover, near Leeds. Mr. Elles, of Longleat, in 1826-27, recommended, from experience, the cultivation of the day-lily†, as a grateful and early spring food for milk cows. And in 1830, D. Grant, nurseryman at Lewisham, advertised the rough or prickly comfrey‡, which he had discovered to be an agreeable, fast-growing, and nutritious food for both cattle and horses. In 1831, we first introduced the Italian rye-grass§, from Hamburgh, and that same year Mr. Thompson, of Banchory, also brought home a few seeds of it from Munich. The late George Stephens, land-drainer, Edinburgh, introduced the hybrid clover|| from Sweden, in 1834, and in the same year the villous annual vetch¶ was brought into notice, and recommended as a winter tare, by Mr. A. Gorrie, Annat, Perthshire, who discovered its seeds in a cargo of Dantzic wheat. In 1835, Mr. Smith, at Ayr, brought the Siberian cow-parsnip** under the notice of the Highland and Agricultural Society of Scotland, as a productive and early spring food for cattle. The blackish-headed foxtail grass†† was first recommended in 1839, by a writer in Loudon's "Gardener's Magazine;" and in 1840, the wood-millet‡‡ or pheasant grass, a species seemingly destined, when its merits become more generally

Day-Lily.

Prickly Comfrey.

Italian Rye-Grass.

Hybrid Clover.

Villous Annual Vetch.

Cow-parsnip.

Blackish Fox-tail-Grass.

Wood-Millet.

* Trifolium incarnatum. † Hemerocallis fulva. ‡ Symphytum asperrimum.
§ Lolium italicum. || Trifolium hybridum. ¶ Vicia villosa.
** Heracleum sibiricum. †† Alopecurus nigricans. ‡‡ Milium effusum.

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known, and its culture better understood, to form an important feature in woodlands, was introduced to cultivation by Mr. A. Gorrie.

Tussack-Grass.

In 1842, the Tussack-grass* of the Falkland Islands attracted considerable attention. This gigantic product of these ungenial regions has been especially recommended for trial on the northern and western coasts and islands of Scotland and Ireland. It was observed in the above year growing luxuriantly on peaty seaward exposures, by Dr. J. D. Hooker, botanist to the Antarctic Expedition, to whom is due the merit of its introduction to Europe, and from whose description the following is an extract:—

"This remarkable grass is perennial, and forms, with its densely matted "roots, crowded but isolated hillocks or tumuli, three to six feet in height, "and three or four feet in diameter, from which the leaves and stems spring. "Roots fibrous; the fibres very tortuous; stems or culms numerous, arising from "the hillocks, erect, branched, or divided only at the base, three or four feet "long, smooth, compressed, leafy, and pale yellow, abounding in saccharine "matter, and, when young, esculent even for man."

Several attempts have been made to introduce the Tussack-grass into general cultivation on the sea-coasts of this country; but, except in the Orkneys and the Lews, with very indifferent success. Mr. Matheson, of Achany, obtained seeds in 1844, which were sown the following spring in various parts of the Lews. In two places only did they vegetate, at Holme and Coll, the soil selected was a deep brown moss, of medium dryness, close to the sea; and the plants made their appearance in the following summer. We examined them in September of the same year, when they shewed every appearance of strength and vigour. The second year the grass produced seeds; the average height attained by the plants was, however, but three feet. Mr. Matheson states, as the result of his experience, that the Tussack, to insure its flourishing, must be grown at a distance not exceeding a quarter of a mile from the sea, so as to be within influence of the driving spray. Mr. Traill is the only person known to us who has raised plants from the seed. His experiments were instituted at Woodwick in the island of Rousay, one of the

* Dactylis cæspitosa.

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Orkneys, the soil and exposure of which are very similar to those in the Lews. On visiting Woodwick last autumn, we found the plants in a very thriving state. Our own experience leads to the conclusion, that localities within influence of the sea spray, the soil being of a peaty nature, are, without doubt, the best adapted for the growth of the Tussack; and in such places it is likely to be of great service, as few other nutritive grasses will exist there. In our own Experimental Grounds it does not thrive well; which may, perhaps, be accounted for by the nature of the soil, which is light and dry. Regarding its value as a forage plant, we have before us an analysis made, at our request, by Professor Johnston, the results of which shew that "the Tussack grass ought to be very nutritive." Propagation, in the absence of seed, is easily effected, under favourable circumstances, by subdivision of the roots.

Numerous additional species of grasses and other herbage plants have been brought into cultivation within the last twenty or thirty years, which are not included in the preceding enumeration, from the dates not having been ascertained. Of these may be mentioned, wood meadow-grass*, nerved-seeded meadow-grass†, various-leaved‡ and darnel-spiked§ fescue-grasses, float-fescue or floating sweet grass‖, Oriental bunias or hill-mustard¶, Moliner's clover**, &c.

In the preceding, the introduction of species has chiefly been recorded; and, as far as regards the indigenous plants, it does not appear that much improvement remains to be effected by the further introduction of these, although important results may be anticipated from extending the field-culture of many of those valuable species, which may be said to have hitherto only formed subjects of experiment. As, however, the cultivation of original species constitutes only the first steps in the improvement of plants, it is, therefore, to the selection of permanent varieties of these, distinguished from their origins by the possession of superior qualities, as greater growth, earlier maturity, adaptation to particular purposes, &c., that we are ultimately to look for the most beneficial results. It must be kept in mind, however, that, al-

* Poa nemoralis.
† Poa nervata.
‡ Festuca heterophylla.
§ Festuca loliacea.
‖ Glyceria aquatica.
¶ Bunias orientalis.
** Trifolium Molineri.

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though much remains to be done in this department, yet a sufficiency has been accomplished, to point out the derivable advantages, and thereby stimulate cultivators to further exertions.

The repeated saving of rye-grass seeds from first crops by the earlier growers, resulted, towards the end of the last century, in the prevalence of a short-lived variety, afterwards termed Annual Rye-grass, and unfit, in many cases, for the laying down of lands to two or more years' pasture, which naturally directed attention to the selection of a more lasting variety. Accordingly, we find that this desideratum was then supplied by Mr. Peacy, of North Leach, Wiltshire, whose perennial rye-grass, as it is still called, soon became known throughout both Scotland and England. Mr. Peacy's example was followed by many other cultivators, each of whom discovered, or fancied he had discovered, a variety possessing new or additional merits, so that, prior to the publication of the "Hortus Gramineus Woburnensis" in 1824, Dickson's, Ruck's, Russel's, Stickney's, Whitworth's, &c., had been introduced. And since that period, names of many other particular growers have been added to the list; so that it now requires no little discrimination to fix on what are really the most deserving of cultivation. About 1830, Mr. T. Bishop, at Methven Castle, Perthshire, brought out an evergreen variety of the wood meadow-grass*, and a long-leaved, deep-rooted variety of the hard fescue†, both of which he selected in 1826, from observing the peculiar manner in which they withstood the severe drought of that summer; and the same cultivator has since brought into notice three other varieties of the hard fescue, viz., an early‡, a large purplish§, and a large saw-leaved sort‖, and also several seemingly much improved varieties of the timothy, foxtail, and others of the most valuable permanent grasses. In 1833, we introduced from France the double yielding sainfoin¶, a very luxuriant growing variety. In 1834, Mr. Gorrie, at Annat, discovered a fertile-seeded variety of the tall fescue-grass**, which he has since continued to pro-

Annual Rye-Grass.

Peacy's Perennial Rye-Grass.

Dickson's and other Perennial Rye-Grasses.

Evergeen Wood Meadow-Grass.

Varieties of Hard Fescue.

Double Yielding Sainfoin.

Fertile Tall Fescue.

* Poa nemoralis *sempervirens*.
† Festuca duriuscula *Urii*.
‡ Festuca duriuscula *præcox*.
§ Festuca duriuscula *purpurata*.
‖ Festuca duriuscula *serrata*.
¶ Onobrychis sativa *bifera*.
** Festuca elatior *fertilis*.

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pagate; and in 1840, we brought from Hamburgh a tall-growing or gigantic variety of the same plant. The tree clover from Bokhara*, a tall variety of white melilot, which attains a height of from twelve to twenty feet, created a little sensation in 1839, when first brought to this country, and still continues to be an object of attraction. The specimens in the collection, grown near Edinburgh, are about sixteen feet in height. In the following year, a very early but rather dwarf-growing variety of lucern from Affghanistan† was received through the East India Company; and in 1841, we introduced from Hamburgh two strong growing grasses, the one a variety of cock's-foot‡, and the other of the wood meadow-grass§.

Bokhara Clover.

Affghanistan Lucern.

Gigantic Cock's-foot and Wood Meadow-Grasses.

In 1841, we received from the Botanic Gardens of Berlin, seeds of a very succulent and rapid-growing grass, under the name of Bromus Schraderi, which, on first trial, seemed to be possessed of highly important qualities, but was found too tender for the severe winter of 1844-45. In 1844, the bulbous barley grass‖ was noticed in the "Bon Jardinier" as being naturally well adapted for chalky and other dry calcareous soils, and has since been found to succeed on such in the south of England; for which localities the villous wheat-grass¶ was also recommended about the same time; but being of a diminutive growth, and only of biennial duration, its culture has not been attended with equal success.

Bromus Schraderi.

Bulbous Barley Grass.

Villous Wheat-Grass.

In 1848, we procured from Mr. Cunningham, Comely Bank, some plants of the Pampas grass**, described by Humboldt in the "Nova Genera et Species Plantarum." It is a strong coarse grass, growing in large tufts or tussocks, with leaves from eight to ten feet in length. As a fixer of loose sand-banks, or on the margins of rivers, it will probably prove useful; while its quick growth and hardy nature point it out as an excellent cover for game. Grows in very poor soils, if moist; but thrives most luxuriantly in a mixture of gravel, clay, and peat.

Quantities of Grass Seeds sown per acre.

The extraordinary and unaccountable disparity in the quantities and propor-

* Melilotus leucantha *major*.
† Medicago sativa *precox*.
‡ Dactylis glomerata *gigantea*.
§ Poa nemoralis *gigantea*.
‖ Hordeum bulbosum.
¶ Triticum villosum.
** Gynerium argenteum.

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tions of grass seeds sown by different individuals has often been noticed as involving a question of considerable pecuniary importance, some of the earlier authors having recommended as much as 20 lbs. of each of the red, white, and yellow clovers, with half that weight of rib-grass, and 3 bushels of rye-grass per acre; while others asserted that one-fourth of that quantity was sufficient. Nor do present cultivators, in many instances, approach much nearer to a unanimity of practice. This being the case, in regard to the commoner grasses and clovers, a still greater uncertainty, as was to be expected, prevailed regarding the proper quantities and proportions of the comparatively recently introduced sorts. These circumstances induced us, in 1834, to lay before the public, through the medium of the "Quarterly Journal of Agriculture," a communication on the kinds and quantities of grass seeds suited to alternate husbandry, permanent pasture, pleasure grounds, &c., a revised copy of which we again published in our "Agriculturist's Manual" in 1836. As several sorts can now be had at reasonable rates, which were then little known, or so scarce and high-priced that their introduction in proper quantities would have unwarrantably heightened the price per acre for seeds, we have prepared a new series of tables which are embodied in the third edition of our "Treatise on the Cultivated Grasses," which will be found to combine the results of continued experience with the latest introduction and improvements in practice. We trust they will not be the less acceptable at the present period, when an increased stimulus to the cultivation of the natural grasses has been effected by the now almost universal practice of frequent drainage, as well as by the alteration in the tariff, which admits the importation of seeds at a considerable reduction in duty; an alteration of the more importance, when it is considered that the greatest supplies and finest qualities of these seeds are derived from the Continent.

The following descriptions of the different grasses and other plants are appended, in the hope that the information therein contained may be useful to cultivators who have not had opportunities of becoming acquainted with their characters and qualities.

As minute botanical descriptions of the various species would extend this synopsis beyond the assigned limits, and also prove uninteresting to the gene-

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Recent works on Agricultural Plants.

rality of cultivators, it may suffice to refer those desirous of obtaining a more perfect knowledge of the various cultivated species, to the "Hortus Gramineus Woburnensis" before-mentioned, and to Dr. R. Parnell's publication on the "Grasses of Britain;" works not only replete with practical and scientific information, but also illustrated with accurate engravings of all the native species, and their remarkable varieties.

Weight of Seeds referable to Measure.

In conclusion, it may be mentioned, that it was formerly an almost universal practice to sow the grasses by *measure*, and the clovers by *weight;* but of late, the more judicious innovation of sowing *the whole by weight* has been successfully introduced; for although the greater weight in one sort is no criterion of its superiority over less weight in another, yet a greater weight in the same kind always denotes a superior quality. Thus, when seed is light, and consequently inferior, the greatest number of seeds is obtained by adhering to a given weight; and hence there is chance of nearly an equal number of plants springing up as when the seeds are plump and heavy. But a given weight or measure, applied to the seeds of different grasses, is no indication of the number of plants each sort will produce—there being material differences both in the relative bulk and specific gravities of such seeds, as well as a difference in the number of each, which germinate in a given quantity.

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SECT. I.—HERBAGE AND FORAGE PLANTS.

UNDER this head it is by no means intended to particularise all the grasses indigenous to this country, but only such as more especially demand the attention of the agriculturist, either from their possessing qualities entitling them to cultivation under certain circumstances, or on account of their possessing properties injurious to the soil, or to such crops as they are generally found growing amongst.

I. LOLIUM*. (*Linn.*)

1°. LOLIUM PERENNE.

English—COMMON RYE-GRASS. | *French*—L'IVRAIE VIVACE.

1. Common Rye-grass—Possesses several good qualities to recommend it to the attention of cultivators, the principal of which are,—its suitableness to a great variety of soils, the facility with which it is propagated, by reason of its seeds being produced in abundance, and their uniformity in ripening, and, although last, not the least of its good qualities, the fibrous structure of its roots, which fits it in an eminent degree for alternate husbandry. Notwithstanding, however, all these good qualities, its culture, in this country at least, has doubtless been carried too far, to the exclusion often of sorts which would yield a greater return, and might, in every respect, be grown in similar circumstances to far greater advantage. 1

Like other plants which have received an extensive cultivation, there are

* From the Celtic *Loloa*, which in Latin is rendered *Lolium*.

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several varieties of the Common Rye-grass, the principal of which are as follows :—

2 **2. Common Perennial or Scottish Perennial.**—This is the sort most generally employed for sowing on lands which are subjected to rotations, in which two or more successive seasons of grass crop are required; and in such cases the seeds should be saved from plants of at least two years' standing, by which means the produce is of more permanent duration than that of seed saved from the crop of the first season; indeed, so much does the duration of Rye-grass depend on the previous manner adopted in saving the seed, that it is the produce of seeds saved successively from the first year's crop, which constitutes that which, from the comparative shortness of its duration, is generally termed—

3 **3. Annual Rye-grass,**—owing to the acquired annual habits of the sort generally known by this name. It differs from the more permanent varieties by having fewer root leaves, and a greater quantity of culms or stalks, which are rather longer, and furnished with a smaller proportion of foliage than those of most of the perennial varieties. From the quantity and length of its stalks or culms, this sort has been considered as yielding a greater bulk of crop the first season, and therefore better suited for single crops of hay than the perennial sorts; but the results of late experiments tend to shew that the quantity of root-and-stalk-leaves which these last produce fully compensates for any deficiency which may arise from the weight of their culms, besides rendering the hay less wiry and more palatable than that of the Annual Rye-grass, which, in fact, seems to possess no superior quality, except that it yields a greater quantity of seed.

4 **4. Evergreen.**—This variety does not yield such a bulky crop as the Orkney, but it is still more perennial in its nature, and withstands the rigour of winter well; hence it derives the name of Evergreen. This variety is sometimes termed *Devon Evers.*

5 **5. Molle's.**—This is a favourite variety in some places; it is rather of a slender habit, but grows tall, and yields a very bulky crop.

6 **6. Orkney, or Pollexfen's.**—This variety acquires its name from having originally been raised by Mr. Thomas Pollexfen, of Kirkwall, in Orkney, who, by devoting much attention to the improvement of Rye-grass for a consider-

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able period, obtained, ultimately, this superior variety. Its qualities are similar to the other Rye-grasses, but it is of a darker green colour than the preceding.

7. **Pacey's.**—This variety produces an abundance of foliage, both at the roots and on the stalks, which, although rather broader, and not so fine in appearance as Whitworth's, is also, from its perennial character, well adapted for pleasure grounds and permanent pasture. Its spikelets are shorter, and contain fewer seeds than most of the other varieties. 7

8. **Russell's.**—Named in compliment to the Duke of Bedford, who first pointed out the original plant, from whence the stock has been raised, to Mr. Holdich, the late editor of the "Farmer's Journal." It is of a much stronger habit of growth, and yields a greater bulk of crop than Whitworth's or Pacey's. It grows also early in spring, and remains late in the autumn. 8

9. **Spreading** (*Lolium stoloniferum*).—This name is applied to a remarkably stoloniferous variety, the seeds of which were procured from Germany, evidently a distinct variety from the Stoloniferous Rye-grass mentioned by Sinclair in his "Hortus Gramineus Woburnensis." It was about a fortnight longer in running to seed in our Experimental Grounds than any of the other varieties of Rye-grass, and produced comparatively few flower-stalks. It is of early spring growth, pushing out long prostrate stolons or shoots, with an abundance of foliage, so that one plant, by the time the spikes begin to appear, will form a close tuft, extending from two to three feet in diameter; these shoots, however, although lying on the ground, never attempt to strike root until near the end of the season, and even then very sparingly. Entire height about fifteen or eighteen inches from the surface; but the length from the root to the point of the spike is often nearly three feet. 9

10. **Stickney's.**—This variety was raised by Mr. Stickney, an intelligent agriculturist in Holderness. It resembles Molle's a good deal in habit of growth, but is more of a perennial nature, and grows stronger and more freely in the beginning and end of the season. 10

11. **Thick-stalked.**—This variety was procured from Vilmorin & Co., Paris, under the name of *Lolium grossum*; it is nearly as remarkable for its stiff and upright habit of growth as the spreading Rye-grass is for its slender stoloni- 11

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ferous habit; height about twenty inches. In bulk of crop (so far as can be judged from the produce of a small sample grown in our Experimental Grounds,) the *L. grossum* appears to be inferior to most of the cultivated varieties.

12

12. **Whitworth's.**—So named in compliment to Mr. Whitworth, at Acre House, a gentleman who has paid much attention to the cultivation and improvement of the different varieties of *Lolium perenne*. In the "Hortus Gramineus Woburnensis," this sort is mentioned as possessing in an eminent degree the properties of early and late growth, and to be of such a perennial nature, or so tenacious of life, that the ground requires two or three ploughings to overcome its vivacity, so as to prevent its injuring the succeeding crop. Its foliage is remarkably fine, which renders it suitable as a mixture for sowing in pleasure grounds.

The above are the most esteemed varieties of *Lolium perenne*, but there are many more of inferior importance, as the Holstein, Broad-spiked, &c., and possessing less permanent characters. Those of the most perennial habits, which are distinguished by their yielding a greater abundance of root leaves and fewer stalks or culms, are denominated Perennial; and those of shorter duration, which generally produce a smaller quantity of root leaves and a greater number of culms, are termed Annual Rye-grasses; but even these last will, under favourable circumstances, exist two or three years, while under unfavourable circumstances the most esteemed perennial varieties will scarcely exist more than one year. Of those termed Annual there is only one variety in cultivation. But even the sorts which are most permanent in their characters, or such as are most capable of producing the same sort from seed, have become so much changed in habits and characters from the effects of continued culture upon different soils, and under different circumstances, as no longer to retain any traces of the properties for which they might have been originally distinguished.

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2°. LOLIUM MULTIFLORUM.

13 **13. Many-flowered Annual Rye-grass.**—This differs from the Italian Rye-grass in being of less duration, or strictly annual. Under this species the following two varieties fall to be included, seeds of which were received from France in 1837; but as they were not found superior to the common in quality or bulk of produce, while they were both so strictly annual as to yield no grass after being cut for seed, their cultivation was discontinued.

14 **14. Brittany many-flowered Annual Rye-grass.**—This variety seems to possess the most common forms of the species, and is indigenous to the province of the same name in France, where it was first taken notice of in 1835 by M. Rieffel, Director of the Agricultural Establishment of Grand Jouan, who finds it particularly useful for growing as a single crop, being only of annual duration, and eminently suited for such soils as he farms, viz. high wet moorish lands of considerable tenacity, and such as do not retain the clovers throughout winter. He recommends sowing it in September at the rate of 40lbs. per acre, and finds it to yield enormous crops of herbage and hay.

15 **15. Bailly's Short-awned Annual Rye-grass**—Was brought into notice by a celebrated agriculturist of that name in the department of the Loire, about 1835, and differs from the last in having only those seeds towards the extremity of its spikes slightly awned; which circumstance, together with the form and great weight of the seeds, as well as its shortness of duration, gives it the appearance of a hybrid between *Lolium italicum* and *L. arvense*. Besides having much heavier seeds, it is shorter in growth, as well as thicker in straw, and finer in foliage than the last.

3°. LOLIUM ITALICUM.

English—ITALIAN RYE-GRASS. | *French*—IVRAIE D'ITALIE.

16 **16. Italian Rye-grass.**—The most marked distinction between this and *L. perenne* is in the lower palea being terminated by an awn or beard, the varie-

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ties of the latter being all beardless. Botanists, however, agree in concluding that the presence or absence of the awn in *Gramineæ* does not constitute a sufficiently permanent character, from its being often caused merely by the effects of climate, soil, &c. Hence it has been concluded that the Italian Rye-grass is only a variety of *L. perenne*. The former, however, possesses other distinctive characters, which, although they may seem of little consequence in the estimation of the botanist, are, nevertheless (some of them at least,) of considerable importance to the agriculturist. Compared with any varieties of Common Rye-grass, the *L. italicum* affords a stronger braird, arrives sooner at maturity, has a greater abundance of foliage, which is broader, and of a lighter or more lively green colour, grows considerably taller, is more upright, or less inclined to spread on the ground; its spikes are longer; spikelets more thinly set, and upon the whole producing a less bulk of seed, which is smaller, has the awn (above mentioned) adhering to it, and is generally little more than half the weight per bushel of that of Common Perennial Rye-grass when grown under similar circumstances. Another of its distinguishing characters is, that it is preferred by cattle to any of the common sorts, a fact which has been proved by numerous experiments in various parts of the country, while it yields early, bulky, and quickly succeeding herbage, which renders it an invaluable grass for alternate husbandry. Its comparatively limited duration fits it well for sowing in mixture with the other grasses intended for permanent pasture, as it dies out and gives place to the weak or slowly maturing perennial sorts, which are destined ultimately to fill the ground.

An experience of nearly twenty years since our first introduction of the Italian Rye-grass to Britain, enables us to state, that, in respect to duration, it may be termed a subperennial, beyond which title even the most permanent varieties of *Lolium perenne* have no claim. In most instances, two seasons of Italian Rye-grass are all that can, with any degree of certainty, be depended upon; and in very wet, cold, spongy soils, it will often exhibit a thin stock the second season. Instances have, however, occurred in which as many as five and even six successive years' produce have been reaped from the same field; but this has arisen more from the ground having been resown in course of reaping the seed, than from the actual duration of the original plants, the

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seeds being remarkably easily separated from the hay, even although not perfectly ripe, which will always render the harvesting of them an operation attended with considerable care and difficulty. Although the natural tendency of the Italian Rye-grass is to produce many stalks or stems from the same root, yet, from its upright habit of growth, it by no means forms a close turf; hence the propriety of sowing it with a mixture of other grasses of a different habit, which, by filling up the interstices, will add considerably to the weight of produce. Different opinions are still entertained as to the real merits of the Italian Rye-grass, but, perhaps, the best proof of its excellence is the great and yearly increasing demand for its seeds. In addition to its uses for hay or pasture it has been very successfully employed as a substitute for tares, a practice described and highly recommended by Mr. Thomas Bishop, Methven Castle, in a communication to the Highland and Agricultural Society of Scotland, published with their Prize Essays and Transactions, March, 1839.

Like all other plants subjected to artificial culture, the Italian Rye-grass is productive of numerous sub-varieties. In this country, no attention has however as yet been devoted to the selection and cultivation of any variety possessing permanency and superiority of character, if we may except the following:—

17. **Short-awned Italian Rye-grass** (*Lolium italicum submuticum*).—This variety differs from the preceding in the spikelets being larger, and bearing florets with short awns, hence its name. The seeds are heavier and thicker. Dr. Parnell, in his work on the Grasses of Scotland, states that an acre of this grass will yield from 5000 to 6000 lbs. of seed. 17

4°. LOLIUM TEMULENTUM.

BEARDED DARNEL.

Roots fibrous; annual. This is a most pernicious weed in wheat fields, where it is sometimes abundant; but as agriculture advances, it is rapidly disappearing in this country. Judging, however, from the quantity of its seeds to be seen in most samples of foreign wheat, it must be very prevalent in some parts of the Continent. The seeds, if very abundant, mixed with 18

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wheat and made into bread, prove injurious to health, causing delirium and stupefaction. It is never to be met with except in wheat fields. From its seeds being about the same size, and ripening about the same period as those of the wheat, they are consequently difficult to separate. Its presence no doubt arises from a bad stock of seed. It is also known in some districts by the name of *Doites*.

5°. LOLIUM ARVENSE.

BEARDLESS DARNEL OF BRITAIN.

19 This differs from the bearded in having very short soft imperfect awns, and a smooth culm or stalk; but resembles it in its strong upright habit of growth, and in other particulars. From the great similarity between this and the preceding, it is generally thought to be a variety, and very likely possesses the same deleterious qualities.

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II. PHLEUM*. (*Linn*).

20

1. Phleum pratense (*Timothy or Cat's-tail Grass*).—Root perennial; flowers in the end of June. In America this grass is cultivated almost exclusively where the soil is favourable; and in Britain it is also coming into repute and cultivated to a considerable extent, particularly in some districts of England. It thrives best on moist soils or carse lands, and also on newly reclaimed moorish soils; when grown on dry light soils its roots become bulbous or tuberous. According to the Woburn experiments, the Timothy grass possesses the advantage of affording a much greater quantity of nutriment when its seeds are ripe than it does if cut when in flower; hence it presents an increased stimulus to its cultivation, from its seeds being procured without its being lessened in value as a hay crop. Therefore, on tenacious, strong, and rather moist soils, it is entitled to a precedence almost to any other, and should at least form a considerable portion of the mixture employed for sowing down such, either for alternate husbandry or permanent pasture. Compared with several others, it is, however, rather deficient as an early spring grass, but is equal to any of the common rye-grasses. It receives the name of Cat's-tail from the form of its contracted panicle; and is the Highland badge of the clan Sutherland, whose crest is a cat. The name of Timothy-grass it received in America, from being originally brought by Mr. Timothy Hanson from New York to Carolina. Herd's grass, or Herd-grass, is another American name for it.—The *Fléole des Prés* of the French.

21

2. Phleum nodosum (*Knotty-rooted, or Jointed Timothy, or Cat's-tail Grass*).—This name is often applied to the bulbous-rooted variety of *P. pratense* above mentioned, as being found only on dry soils; but it differs from it in the form of its culm or stalk, which is knee-jointed, and of a prostrate spreading habit of growth. Its panicles are shorter and more tapering towards the extremities, and its jointed culm more concealed by the sheaths of its foliage. With all these differences, however, it is generally considered as only a variety of the preceding. When grown from seed it retains its original characteristics.

* Supposed to be the Greek name for *Pypha*.

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III. ALOPECURUS*. (*Willd*).

22 **1. Alopecurus pratensis** (*Meadow Fox-tail Grass*).—Root fibrous, perennial; flowers in May and beginning of June. This is one of the earliest and best of pasture grasses, but not so well adapted for hay, as it produces few stalks, which are sparingly furnished with leaves; its root leaves are very broad, long, soft, slender, and grow rapidly when cut or eaten down by live stock; it grows naturally on rather superior soils of medium texture, and constitutes the greater portion of many of the richer natural pastures of Britain. It requires two or three years after sowing to arrive at full maturity. —*Le Vulpin des Prés* of the French.

23 **2. Alopecurus geniculatus** (*Jointed Fox-tail Grass*).—Root fibrous, and perennial; flowers in June, July, and August. This species grows naturally in watery or marshy places, but seldom on peaty soils; its seeds are difficult to procure, owing to the small number of culms or seed stalks which it produces, and the remarkable irregularity of their ripening. It may be considered of little importance to the agriculturist on account of the small quantity of herbage which it yields; however, on some of the irrigated meadows near Edinburgh, and on the alluvial banks of rivers, where it is occasionally flooded by fresh-water tides, its produce is not so very inconsiderable, yet such places might be occupied by others which would yield a larger bulk of produce.—*Le Vulpin genouillé* of the French.

24 **3. Alopecurus agrestis** (*Slender Fox-tail Grass*).—Root fibrous, of biennial duration; flowers in July and August. This grass is generally termed an annual, but it will flower and last two seasons on a light dry soil. It is of comparatively little importance, but may be sown along with some others on light sandy soils on the sea coast, where it will grow much better than any of the common rye-grasses.—*Le Vulpin des Champs* of the French.

25 **4. Alopecurus nigricans** (*Blackish headed Fox-tail Grass*).—Perennial.

* From *alopex* a fox, and *oura*, a tail.

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Native of Europe and the north of Asia. This grass somewhat resembles the meadow fox-tail; but besides the darker colour of its panicles, it differs in being of a much more luxurious and rigid habit of growth; it also comes into use rather earlier in spring. The results of several trials to grow its seeds in Scotland seem to indicate an unsuitability in the climate for that purpose; but as these are now beginning to be grown on the continent, a few years will be sufficient to test its real merits.

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IV. ARRHENATHERUM*. (*Beauv.*)

26 **1. Arrhenatherum avenaceum** (*Fibrous-rooted Tall Oat-like Grass*). — This species is also known by the names of *Avena elatior* and *Holcus avenaceus*. The only botanical distinction between this and the following is in the roots being fibrous, while in the other they are bulbous or tuberous, and in the colour of its foliage, which is of a more vivid green; it grows taller, more close, or, in other words, produces a much greater number of stalks or culms upon a given space of ground, and a greater bulk of foliage on the culm, than the bulbous-rooted variety, qualities which render it a valuable grass for cultivating, either for hay or pasture; its fibrous roots adapting it in an eminent degree for alternate husbandry, contrary to those of the bulbous-rooted sort, which render it a most troublesome weed in cultivated land, owing to the great tenacity of life which its tubers possess. Attempts have been made to account for the variable forms of the root from the difference of soil on which this grass is cultivated, light dry soils causing the formation of the bulbous roots, and moist rich soils the fibrous ones. If the difference does arise from such causes, it must be from a very long continued growth on their respective soils; for the seed of the true fibrous variety never produces bulbous-rooted plants, even when sown on the lightest and driest soils and suffered to grow there for a length of time; seeds of the bulbous-rooted sort will, on the other hand, produce plants having bulbous roots the first season of their growth on whatever kind of soil they may be sown. In France the Fibrous-rooted Oat-grass is cultivated to a greater extent than any other kind whatever, and is there sometimes known by the name of *Raygrass de France*. Although rather late in flowering, it yields a considerable quantity of foliage in the spring months, and reproduces rapidly after being cropped.—*L'Avoine deveé* of the French.

27 **2. Arrhenatherum avenaceum** *var.* **bulbosum** (*Bulbous-rooted Oat Grass*

* From *arrhen*, a male, and *ather*, a point, the spikes being furnished with awns.

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or Knot Grass).—This sort is more common than the other in most parts of this country, and is generally found growing on light soils and rocky places in cultivated fields. It is only to be overcome by proper tillage and gathering off its roots; its foliage is thin, and not well relished by cattle. It is admitted as forming a distinct species by some botanists, although it is more commonly termed a variety of the preceding.

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V. DACTYLIS*. (*Linn.*)

28 **1. Dactylis glomerata** (*Rough Cock's-foot*).—Root fibrous, perennial; flowers in June and July. The Rough Cock's-foot is a well-known grass, growing abundantly on all waste places where not very barely cropped by cattle. It is a valuable grass in cultivation on account of the great quantity of produce which it yields, and the rapidity with which its leaves grow after being cut. Its habit of growth is tufty, and rather unsightly, with broad foliage of a slightly glaucous-green colour, which renders it unfit for ornamental parks and pleasure grounds. Sheep are remarkably fond of it, but they should be put to graze early in spring; for if allowed to stand too long, it gets hard and coarse. When subjected to perpetual pasturage the Cock's-foot does not seem to last above five or six years, but gives place to the smaller and finer leaved sorts. This may be accounted for by its spreading very little in the ground, and being in general closely eaten down by cattle, particularly sheep. It is well adapted for growing in shady moist places, under trees, &c. In America it is getting into extensive cultivation, under the name of Orchard-grass.

29 **2. Dactylis glomerata** *var.* **gigantea** (*Gigantic Cock's-foot Grass*).—This is one of the results of an increasing attention which has of late years been bestowed upon the improvement of the natural grasses, by selecting and propagating from varieties possessed of superior properties. It is distinguished from the common form of the species, by being of a much more vigorous growth, attaining to a considerably greater height, and producing larger sized seeds. First grown by Messrs. Booth & Co., Hamburgh, and introduced from thence by us in 1841.

30 **3. Dactylis cæspitosa** (*Tussack Grass of the Falklands*).—This species is very readily distinguished from *D. glomerata* by the longer and less rigid flower spike, the highly succulent nature of the stalks and leaves, its tufted

* From *dactylos*, a finger; the head being so divided, as, in the fervid imagination of the great botanist, to resemble fingers.

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and, generally, more robust and luxuriant habit of growth. Another striking character is, that on viewing the leaf by transmitted light, two very distinct semi-transparent lines are seen running on either side of the mid-rib, from the base to the apex. At page 13 will be found further particulars relative to its history and cultivation.

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VI. FESTUCA*. (*Linn.*)

31 **1. Festuca arenaria** (*Sand Fescue Grass*).—This name is applied to a Festuca found growing abundantly amongst *Elymus arenarius, Ammophila arundinacea, &c.*, on the verge of the blowing sands of Barry, in Forfarshire. Root leaves long and wiry-like, bundled together by long reddish sheaths; stem leaves also long, and a good deal flattened; stems nearly upright, with large slightly kneed joints; average height of specimens growing amongst the sand eighteen inches; root creeping, perennial; flowers in June and July. The cultivation of this Fescue has never been attempted on an extensive scale, but it succeeds well on light sands, yielding a considerable quantity of nutritious animal food, where few other grasses will grow, except the Sand Lyme and Reed grasses, which cattle refuse to eat. It is noticed by some botanists as being only a variety of *F. rubra* or *F. duriuscula*, but whether entitled to rank as a distinct species or not, it is certainly very distinct both in habit and appearance.

32 **2. Festuca duriuscula** (*Hard Fescue Grass*).—Stem-leaves broader and more flattened than the root ones, which are rounded or wire-shaped; root fibrous, perennial; flowers in June or July; height from one and a half to two feet. The Hard Fescue may be classed amongst the best native grasses for general purposes. It will thrive on a great variety of soils, and produce a greater weight of fodder than might be expected from its comparative dwarf habit of growth, and is found to resist the effect of severe drought in summer, and to retain its verdure during winter in a remarkable degree. It constitutes a great portion of the best natural pastures in the country, especially where the soil is light and dry. From the fineness of its foliage and greenness in winter, it is well adapted for sowing in parks and pleasure grounds, and for sheep pasture; but for short grass to be kept under the scythe, it should, from its wiry nature, enter sparingly into the mixture.

* From the Celtic *fest*, signifying *pasture* or *food*.

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There is a variety of this species *F. uri* having remarkably long slender root leaves, and few stems, the former of which attain the remarkable length of three feet.

3. Festuca duriuscula *var.* **præcox** (*Early Hard Fescue*).—A purplish coloured, very early, and consequently useful variety for Spring pastures. 33

4. Festuca duriuscula *var.* **purpurata** (*Purplish Hard Fescue*).—So named from its general colour, and that of its stems and panicles in particular. This variety is considered by Mr. Bishop, Methven Castle, Perthshire, who has experimented largely with grasses, to be the most productive of the Hard Fescues, and exceedingly well adapted either for hay or pasture lands. 34

5. Festuca duriuscula *var.* **serrata** (*Saw-leaved Hard Fescue*).—So named from possessing in a greater degree than the others a particular roughness on the margin of its leaves. Sheep are found to manifest a partiality for this sort; and the pleasing green colour of its foliage, which it retains in an unusual freshness throughout the winter, renders it especially applicable for lawn pastures. 35

6. Festuca duriuscula *var.* **uri** (*Bishop's Creeping Rooted Hard Fescue*).—From the creeping tendency of this, it might, perhaps, with more propriety have been included under *F. rubra*, from which, however, it differs in other particulars; its principal value depends on the deep and creeping habit of its roots, which suits it in an eminent degree for withstanding severe drought, and, in the opinion of its originator, would render it a valuable acquisition to Colonists in such climates as Australia. 36

Festuca calamaria—See *Poa Sylvatica.*

Festuca elatior—See *Bucetum elatius.*

Festuca elatior *var.* **gigantea**—See *Bucetum elatius* var. *giganteum.*

7. Festuca heterophylla (*Various-leaved Fescue-Grass*).—Root leaves long, narrow, and flexuous, of a dark green colour; leaves of the culm or stalk, broad, and of a lighter or more vivid green; culms numerous and upright; root fibrous, perennial; flowers in June and July; height four to five feet. This species is a native of France, and introduced into Britain in 1812. It is grown pretty extensively on several parts of the Continent, particularly in the Low Countries, from whence its seeds are imported. It is well adapted for our climate, and ripens an abundance of seed. For a single crop of hay, it is 37

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particularly well adapted, and will yield as great, if not a greater, bulk of herbage than any other of the Fescues, but produces little except root leaves after being cut. Upon the whole, it is well fitted for sowing as a mixture, either on hay or pasture lands, but particularly on the former.—*La Fétuque à feuilles variées* of the French.

Festuca loliacea—See *Bucetum loliaceum*.

38 **8. Festuca ovina** (*Sheep's Fescue*).—Leaves very narrow and rough; stem square; seed small, cylindrical, and pointed at both ends; grows in small tufts; root fibrous, perennial; height from twelve to eighteen inches; flowers in June and July. This species is easily distinguished from the *F. duriuscula* by its dwarf and more tufted habit of growth, its short, stiff, upright leaves, and, above all, by its square culms or stalks. In quantity of produce it is much inferior to the other cultivated Fescues, but admirably adapted for growing on elevated moorish sheep pastures, being well liked by these animals. Although the foliage is fine, yet it is not well suited for sowing on bowling-greens, &c., on account of its small tufted habit of growth, and the difficulty experienced in cutting it with the scythe.

Festuca pratensis—See *Bucetum pratense*.

39 **9. Festuca rubra** (*Red or Creeping Fescue-Grass*).—This is considered by some as merely a variety of the *F. duriuscula* slightly altered in habit, from growing always on light dry sandy soils. It is distinguished, however, by its creeping roots, broader and generally darker coloured foliage, and producing a smaller number of stems. From its creeping-rooted habit, it is comparatively of little use to the agriculturist, except for sowing on light sandy sea coasts, after the shifting sand has been partly consolidated.

40 **10. Festuca tenuifolia** (*Fine-leaved Fescue*).—This sort, evidently a variety of *F. ovina*, grows naturally in great abundance with it in many of the dry pastures of France, and may be met with occasionally in Britain also. It differs from the latter in being of a less tufted habit of growth, having shorter stems or culms, looser panicles, awnless, smaller and brighter coloured seeds, and much longer and slenderer leaves, which are of a light vivid green colour. Is well suited for sowing down pleasure grounds, but of little importance in field culture. *La Fétuque à feuilles fines* of the French.

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VII. BUCETUM. (*Parnell*).

41 **1. Bucetum pratense** (*Meadow Fescue-Grass*).—Leaves broad, and of a lively green colour; root fibrous; perennial; height generally from two to three feet; flowers in June and July. This is an excellent grass, either for alternate husbandry or permanent pasture, but more particularly the latter: when growing naturally, it is generally found on superior, rather moist soils, and often forming a considerable portion of the natural pasture. It is well liked by all kinds of domestic herbivorous animals.—*La Fétuque des Prés* of the French.

42 **2. Bucetum loliaceum** (*Darnel* or *Spiked Rye-Grass-like Fescue*).—In habit of growth and bulk of produce this species much resembles the last, but differs from it in having its inflorescence spiked, as in the rye-grass, also by being naturally more adapted to grow in marshy situations. It is easily distinguished from the rye-grass by its spikelets having occasionally a short foot-stalk, always two glumes, and improving in proportion to its age, which is directly the reverse of the rye-grass. The true *B. loliaceum* produces little seed, and hence has been considered a hybrid between the *B. pratense* and *Poa fluitans*, an opinion which seems justified in some respects by its growing generally on moister soils than the former, but never in water like the latter. There are, however, many intermediate varieties between *B. loliaceum* and *B. pratense*, which have short branches towards the base of the spike, and become two-rowed towards the point; these are generally more prolific in seed, and constitute the *B. loliaceum* of the seed shops.

43 **3. Bucetum elatius** (*Tall Fescue-Grass*).—This species may be easily distinguished from *B. pratense* by being much larger (nearly double) in all its parts. It is also like it perennial, and fibrous-rooted; grows naturally on moist superior soils, in waste places, by the banks of rivers, &c. It is rather a coarse-like grass, but may be sown either for hay or permanent pasture, on moist soils, shady places, &c. Yields an abundant crop, and, notwithstanding

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its seeming coarseness, is relished by cattle generally. There are several varieties intermediate between this and *B. pratense;* the most important of which, to the cultivator, are *B. elatius* var. *fertile* and *B. elatius* var. *sterile:* the former produces an abundance of seeds, and may be at once known by its more pendulous or drooping panicle; the latter, which is the most common, in a wild state produces comparatively few perfect florets.

44 **4. Bucetum elatius** *var.* **giganteum** (*Gigantic Tall Fescue-Grass*).—This name has been appropriately applied by its originators, Messrs. Booth, of Hamburgh, to a very strong growing variety of Tall Fescue-grass, distinguished, like the Giant Cock's-foot-grass, by its gigantic growth, and large size of seeds; in addition to which properties, it is also more prolific in seed than some of the commoner varieties of *B. elatius.*

45 **5. Bucetum giganteum** (*Tall* or *Giant Brome Grass*).—Leaves long, very broad, ribbed, and of a vivid green colour; root fibrous, perennial; height four to five feet; flowers in July and August. Grows naturally in woods, but not common. It yields an immense bulk of foliage, which, however, is not well relished by cattle, except in a dry state, mixed with other hay. Together with some of the other Brome-grasses this is eaten by deer and roe in winter, and also by sheep when better food is scarce.

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VIII. POA*. (*Linn.*)

1. Poa abyssinica (*Abyssinian Meadow-Grass*).—In the "Bon Jardinier," this grass is mentioned as having been so highly recommended by travellers, who had opportunities of witnessing the immense returns which it yields in its native country, that several trials have of late been made, with a view to ascertain how far it might be advantageously grown in France; the results of which rather tend to shew, that, although in ordinary seasons it will ripen its small millet-like seeds in the latitude of Paris, yet its culture for forage or herbage is likely only to be profitably practised in the southern provinces. 46

2. Poa annua (*Annual Meadow-Grass*).—Stem slightly compressed; roots fibrous, annual; average height about nine inches; in flower most part of the year. The *P. annua* is the most common grass in all temperate climates, and generally considered as a very troublesome weed. In some parts of Suffolk it forms whole fields to the total exclusion of all other grasses, and is there greedily eaten by cows and sheep, hence it has been recommended as a pasture grass; but there are two obstacles which tend to prevent its cultivation, viz. its small bulk of produce, and the difficulty with which its seeds are collected; the latter owing to the irregularity with which they arrive at maturity, and from being easily shaken out when ripe. It has, however, been beneficially employed for sowing on greens and bleaching grounds, in towns and places where the perennial grasses are apt to be destroyed in winter; in summer it will ripen its seeds in four or five weeks from the time of sowing. 47

3. Poa aquatica† (*Water Sweet* or *Meadow Grass*).—Leaves long, broad, tapering to the point, and of a vivid green colour; root powerfully creeping; height about six feet on an average, but often much more; flowers in the latter end of July. Like the last species, this grows naturally in and by the sides of pools, and on rich alluvial soil, more especially on the banks of rivers, 48

* This word signifies Grass or Herbage.

† *Glyceria aquatica* of some.

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where it is occasionally covered by fresh water tides. It is one of the tallest of British grasses; a native of most parts of Europe, and very common in the fens of Cambridgeshire and Lincolnshire, where it not only affords rich pasturage in summer, but forms the chief winter fodder.—*Le Paturin aquatique* of the French.

49 **4. Poa compressa** (*Flat* or *Compressed Stalked Meadow-Grass*).—Leaves short and rather narrow, particularly those on the culm; root perennial, fibrous, or slightly spreading; height one and a half to two feet; flowers in June. Grows naturally on dry, rocky, or stony places, old walls, &c.; seldom or never on good pasture soils.

50 **5. Poa fertilis** (*Fertile Meadow-Grass* and the *Poa serotina*, or *Late-flowering Meadow-Grass* of Willdenow and others).—Root somewhat creeping and knotted, perennial. Native of Germany and other parts of the Continent, where it grows naturally in meadows and rich moist soils. This species somewhat resembles the *P. nemoralis*, but is a stronger growing plant, and much more fertile in the production of seeds, properties which have rendered it the subject of experiments; but from the lateness of its growth in Spring, and producing little aftermath, the results have been by no means satisfactory.

51 **6. Poa fluitans*** (*Floating Sweet Meadow* or *Fescue Grass*).—Known also by the names of *Festuca fluitans, Glyceria fluitans.*—Leaves long, broad, and floating when in deep water; root fibrous; height two to three feet. Flowers from the middle of May to the end of August. Grows naturally in and by the sides of ditches, pools, rivers, and on alluvial fresh water marshy soils generally, and is eaten with avidity by horses, cattle, sheep, and swine. It has been said not to thrive except when constantly in water; but there are few grasses better adapted for irrigated meadows, and even on moderately dry ground it will yield a considerable produce. Besides being useful as a herbage and forage plant, its seeds are eaten greedily by wild ducks and other marsh fowls, as also by trout and other fresh water fish. They are very nourishing, and form the manna-croup of the shops, and are used in soups and gruel. They are rather difficult to collect from ripening irregularly, and being easily shaken

* *Glyceria fluitans* of some.

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out when ripe. In Germany and Poland they are gathered by putting a cloth under the panicles, and shaking or beating them off with a stick (much in the same manner in which juniper berries are collected in our country), repeating the operation every two or three days until the whole are ripened. There is a variety occasionally to be met with in this country, the seeds of which are much shorter, and on that account termed the *Short-seeded Floating Meadow-Grass*, and sometimes imported from the Continent under that name. It is much inferior to the other; and, besides the shortness of its seeds, may easily be distinguished by a dwarfer habit of growth, and having shorter and more branching panicles—*Le Pâturin flottant on Fétuque flottante* of the French.

7. Poa nemoralis (*Wood Meadow-Grass*).—Leaves plaited at the base, broader and longer than the sheath; culm of foot-stalk slender, but pretty upright; root fibrous, or slightly spreading, when growing in light sandy soil; flowers in the end of June; height two to three feet. The Wood Meadow-grass, as its name implies, is naturally found in shady woods, particularly in alpine situations, and is well adapted for growing under trees, but will also thrive on exposed places, and even on inferior light soils. Its habit of growth is delicate, upright, close, and regular, with the panicles partially drooping, or bending, when nearly ripe. There is no grass better adapted for pleasure grounds, particularly under trees, as it will not only grow in such places, but form a fine sward where few of the other fine grasses can exist. It produces foliage in abundance early in spring, but grows rather slowly after being cut for seed. From the closeness of its habit of growth, it is found to displace annual and biennial weeds, and also those of more permanent duration, provided it be allowed to run to seed. There is a variety of *P. nemoralis* occasionally found with much narrower leaves, and generally more slender and jointed in the culm, but it is of inferior importance. 52

8. Poa nemoralis *var.* **gigantea** (*Gigantic Wood Meadow-Grass*).—This is an improved variety of the original species, also, like the Giant Cock's-foot and Tall Fescue-grasses, introduced by Messrs. Booth of Hamburgh. 53

9. Poa nemoralis *var.* **sempervirens** (*Evergreen* or *Hudson's Bay Meadow-Grass*).—Is more generally known by the less applicable name of *P. nervosa*, in consequence of its original cultivator, Mr. Thomas Bishop, Methven 54

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Castle, having received it with that appellation from Mr. Stewart Murray of the Glasgow Botanic Garden. In a communication, however, from Mr. Bishop to the Highland and Agricultural Society, published in March, 1839, he states that Mr. Murray has no recollection of having a grass under that name, and considers that it must have been inadvertently applied to this variety, which was a short time previously received along with some others from North America. The recommendatory characteristics of the Hudson's Bay Meadow-grass are its greenness in winter, earliness in spring, and the rapidity with which it reproduces leaves and stems after being eaten or cut down; in addition to which, its thick growth, fineness of foliage, and capability of growing under the shade of trees, like the common *P. nemoralis*, (from which it cannot be considered specificially distinct), render it a most desirable grass for lawns and ornamental parks.

55 **10. Poa nervata** (*Nerved-seeded Meadow-Grass*).—This species differs essentially from all the cultivated sorts, and may be described as having somewhat creeping roots; numerous barren stems six inches to two feet long, thickly furnished with two rows of alternate leaves, with thick, softish, slightly furrowed, and angular culms. A native of North America, generally attaining a height of thirty inches to three feet. The unusual manner of growth of this grass, in producing long leafy stems, particularly in the aftermath, seems to recommend it as deserving of a place in mixtures of permanent grass. It appears to thrive best in rich and rather moist soils of medium texture; but farther experience is requisite to ascertain its actual merits.

56 **11. Poa pratensis** (*Smooth-stalked Meadow-Grass*).—Root creeping; stem smooth; leaves hardish and roughish; height two feet; flowers in the end of May; grows naturally in very dry situations. This grass has been greatly recommended for sowing for pasture, from its yielding a large quantity of herbage at a very early period of the season; but it possesses several bad properties, which render the propriety of its culture at least doubtful, except perhaps in very dry soils: its creeping roots impoverish the soil, and its foliage ceases, in a great measure, to grow after the month of June; while it is liable to be injured by the disease called rust, and it grows in large patches, entirely banishing all the other grasses within its reach.—*Le Pâturin des Prés* of the French.

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57 **12. Poa sylvatica** (*Wood Reed Meadow-Grass.*)—Leaves broad, long, and tender, of a bright lively green colour; root fibrous, perennial; height about four feet; flowers in July. This grass seems to possess qualities sufficient to entitle it to a share of cultivation; but it is rather rare, being only found in old moist shady woods.

58 **13. Poa trivialis** (*Rough-stalked Meadow-Grass*).—Leaves rather smooth; producing shoots from the base of the culms, which trail on the ground, and make small roots at their joints in moist weather; root fibrous, perennial; flowers in the end of June; height, two to two and a half feet. This is a valuable grass as a mixture for pasture lands, particularly on damp soils, and where partly shaded by trees; its stoloniferous shoots begin to grow pretty early in spring, and by lying prostrate on the ground form a beautiful verdant sward. As the season becomes more advanced, however, these shoots are dried up by the effects of the sun, but they shoot out again towards the end of the season, when the weather becomes more moist, and continue green during the greater part of the winter, a habit of growth which fits it for mixing along with the upright growing sorts, such as the Italian Rye-grass. Although possessed of tender foliage, and easily cut with the scythe, it is not adapted for sowing for short grass, as it is apt to get dried up in summer, while its creeping shoots are liable to be raised by the rake or broom in cleaning off, and thus giving the work an unfinished appearance.

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IX. CATABROSA* (*Beauv.*)

The leaves of this genus are long, broad, and terminated abruptly at the point; young leaves, and the portions of the culm or stalk which are covered by the sheaths of the leaves, very tender, and possessed of a remarkably sweet pleasant taste, resembling that of liquorice root; root fibrous, perennial; height one to two and a half and sometimes three feet; flowers in June. There is only one species of this genus, viz.

59 **1. Catabrosa aquatica** (*Water Whorl-Grass*).—This species grows naturally in marshy places, or in situations where the *Glyceria fluitans* is generally found, to which it bears a considerable resemblance in general habit. It is sometimes known by the name of *Water Hair-grass*, (*Aira aquatica*). From a supposition that it will only grow in water or mud, the *C. aquatica* has been discarded as being unfit for cultivation, but experiments have proved that it can be grown with advantage on irrigated meadows. Cattle are very fond of its foliage, and it is also eaten by wild ducks and other aquatic fowls.—*Le Paturin canche* of the French.

* From *katabrosis*, signifying food.

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X. ELYMUS* (*Linn.*)

1. Elymus sibiricus (*Siberian Lyme-Grass*).—Root fibrous, perennial; flowers in June; height four feet. The Siberian Lyme-grass does not produce its foliage till rather late in the spring, but grows rapidly afterwards, and its leaves, which are numerous, long, and broad (but soft and tender), cover the stem nearly up to the spike, and are, together with the culm, much relished by cattle, either in a green or dry state. Although termed a perennial, it is not so permanent in its duration as some of the other grasses, being more of the habit of the Rye-grasses in this respect; and, like most of them, is better fitted for alternate husbandry than for permanent pasture. The soils best adapted for the growth of Siberian Lyme-grass seem to be those of a free texture, and rather dry than otherwise; for when grown on cold, wet, tenacious soils, its foliage is apt to be injured by rust. 60

2. Elymus arenarius (*Sand or Sea-side Lyme-Grass*).—Leaves of a light glaucous colour, and partly rolled in at the edges; perennial, with powerfully creeping roots; height four feet; flowers in July. This grass is not eaten by any of our domestic animals, owing no doubt to its excessive hardness and coarseness. Sir Humphrey Davy found, by analyzing the soluble matter afforded by this grass, that it contained one third of its weight of sugar, hence it has been not inappropriately termed the sugar-cane of Britain; and its hay, from thus containing a considerable quantity of nutritious matter, has been recommended to be cut like chaff and given to cattle, either alone or mixed with other food. The purpose, however, for which *E. arenarius* is generally employed, and for which its creeping matted roots fit it in an eminent degree, is for binding loose sands, and preventing the encroachment of the sea, for which purpose it is employed in several parts of Britain, and more extensively on the shores of Holland; it is only to be met with growing naturally in such situations.—*L'Elyme des Sables* of the French. 61

* From *elyo*, to cover.

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3. Elymus geniculatus (*Jointed Lyme-Grass*).—Spikes long and slender, often jointed or bent down as if broken; perennial; grows naturally on sandy sea shores, but is not common on those of Britain. This plant bears a considerable resemblance to the *E. arenarius*, but differs in its foliage, being narrower, and in its spikes, as well as general habit, being more loose or open. In addition to being useful for similar purposes with the other, its large oat-like seeds afford good food for wild-fowl; and, from growing in large tufts, to the height of from four to six feet on almost any sort of soil, it may be beneficially employed as a cover for game, especially in rabbit warrens, and sandy or gravelly links.

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XI. AMMOPHILA. (*Koch.*)

Although possessed of no qualities to render it of any importance to the generality of culivators, the genus *Ammophila*, from its similarity in use and habit, is so like the *Elymus arenarius*, that it has been thought as well on the present occasion not to separate them, and it is therefore inserted in precedence to others of far more general importance. The ripe seed, in size and shape, resembles a grain of oats; leaves involute, or rolled inwards at the edges, of a light green colour, hard, sharp-pointed, and rather longer than the culm; root creeping, perennial; height one and a half to two feet; flowers in July. There is but one species of the genus *Ammophila*, viz.

1. **Ammophila arundinacea**, also known by the names of *Arundo arenaria* and *Psamma arenaria* (*Sea-Reed* or *Mat-Grass*).—It is principally used along with the *Elymus arenarius* for fixing or consolidating shifting sand, and for preventing encroachments of the sea; for which purposes its value is so well appreciated, that there are several enactments prohibiting the destroying of the *Marrum*, as it is sometimes called, under severe penalties. It receives the name of Mat-grass from its being employed in the fabrication of mats; it also affords excellent and durable thatch, and has been found to yield a fibre equal to flax, but short, and in smaller quantities. 63

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XII. AGROSTIS*. (*Linn.*)

64 **1. Agrostis alba** (*Fiorin* or *Marsh Bent-Grass*).—(The *A. stolonifera* of some botanists). Root perennial, fibrous, when growing in marshy or damp soils, but assuming more of a creeping habit when growing on light dry soil; height one foot to one and a half; flowers in July. There is a great number of varieties of *A. alba*, to several of which distinct specific names have been applied: of these may be enumerated *A. stolonifera*, stoloniferous bent-grass or fiorin, *A. alba* var. *latifolia*, which seems to be the same, *A. compressa*, *A. sylvatica*, and others, which all seem to agree in acquiring a very stoloniferous habit when growing in moist situations, but assuming more of a tufted habit when growing on dry soils. The famous fiorin of Dr. Richardson seems to be the *A. alba* var. *latifolia*, which is distinguished by its broad leaves and more luxuriant habit of growth. In this country it has not been found in general to deserve the high character which has been bestowed upon it; it is said, however, to be better adapted for the climate of Ireland. One reason why it may have partly failed in this country is, that cultivators who have been at the trouble to give it a trial may have done so on damp marshy soils indiscriminately, without paying attention to what particular soil may be best adapted for it. The soils and situations on which it is found to thrive best in a natural state, are such as are of a free and porous texture, have a considerable portion of peat in their composition, and are well supplied with water, rather of a running than of a stagnant nature, such as the sides of ditches in reclaimed peaty lands. It is not advisable to sow the fiorin on any other than a damp or irrigated peaty soil.

65 **2. Agrostis vulgaris** (*Common* or *Creeping-rooted Bent-Grass*, also *Black Switch*, *Squitch*, or *Quick-Grass*).—This grass is distinguished from the preceding and its varieties, by its more loose and spreading panicles; creeping perennial roots, being generally confined to dry soils by its less stoloniferous and more

* From *agros*, a field, the Greek term for all kinds of grass.

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tufted habit of growth. It is generally considered as a troublesome weed in dry light soils, and, from not being liked by cattle, commonly attracts attention only as being a useless grass, to be got quit of as soon as possible, more particularly as its creeping roots prove highly injurious to the soil. However, notwithstanding its bad qualities, sheep are found to eat it, particularly in the winter months, and it is sometimes sown on bare gravelly places, where the more valuable grasses will not grow, for the purpose of covering them with vegetation. There are many varieties of *A. vulgaris*, the most remarkable of which may be mentioned, viz. the *A. dispar*, distinguished by its broader leaves, more straggling habit of growth, and more powerfully creeping roots. This variety, or, as it is sometimes termed, distinct species, is generally to be met with on strong, superior black land; and from this circumstance may have acquired its more luxuriant habit, which, however, is permanent when raised from seed. Another variety, termed the *Creeping-grass of Suffolk*, seems intermediate between the two, but possessed of no qualities superior to either.

3. Agrostis canina (*Brown Bent-Grass*).—Leaves narrow and pointed; culms numerous, and generally upright; slightly stoloniferous; root fibrous, perennial; height about a foot and a half; flowers in June and July. Grows naturally in poor wet peaty soils, and is only valuable for cultivating on such. Cattle prefer this to most others of the genus. One of the most distinct varieties of *A. canina* is that termed *A. capillaris;* which has a more vigorous habit of growth, with a spreading panicle, much larger and more horizontally branched. There are also numerous other varieties of less importance, all, however, distinguished from the preceding species and their varieties, by having their florets less or more awned. 66

Anemagrostis spica-venti (*Silky* or *Windward-spiked Bent-grass*).—Root fibrous, annual; flowers in July and August; height two feet. Grows naturally on sandy or gravelly soils; but from its annual habit is of little importance to the agriculturist, being only useful for sowing in blanks of grass fields, so as to insure one crop of hay in the season. 67

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XIII. TRISETUM*. (*Persoon.*)

68 **1. Trisetum flavescens** (*Yellowish Oat-Grass*).—This grass is separated by modern botanists from the genus *Avena*, and placed under that of *Trisetum*, which is distinguished botanically from the former, by having the lower palese terminated in two bristle-like points, and an awn proceeding from about its middle, so as to form in all *three bristles* hence the name *Trisetum*. Root fibrous, perennial; height one and a half to two feet; flowers in July. Grows naturally in dry pasture, on rather light and good soils. The *T. flavescens* yields a considerable bulk of fine herbage, and deserves to form a portion of all mixtures on light dry soils, either for hay or pasture; arrives early at maturity, and, although a perennial, yet, if allowed to ripen seed, is but of short duration, particularly if grown on stiff moist soils. There are other two species, *T. pratense* and *T. pubescens*, which have been recommended as deserving of cultivation.—*L'Avoine jaunâtre* of the French.

69 **2. Trisetum pratense** (*Narrow-leaved Oat-Grass*).—Root fibrous, perennial; flowers in the first week in June, and ripens seed in July; grows from eighteen inches to two feet in height. This grass is frequent in Scotland and other parts of the United Kingdom, at an elevation of 2500 feet. Its nutritious properties are not great; and, consequently, it is not worth cultivating, except on bare and exposed rocks and dry heaths. It grows, however, very well in moist meadows, but prefers chalky soils. Sheep and cows are fond of the young leaves; but when allowed to become rank they will not touch it.

70 **3. Trisetum pubescens** (*Downy Oat-Grass*).—Root perennial and somewhat creeping; flowers in the second week of June, and ripens seed in the middle of July. A very hardy grass. Its reproductive powers are very great, although the foliage does not attain any considerable length. Cattle and horses will eat it when mixed with other grasses. The downy appearance of the leaves, which is supposed to be a distinguishing characteristic, is lost when the grass is cultivated on superior soils.

* From *tres*, three, and *seta*, a bristle, on account of the three awns of the flower.

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XIV. ANTHOXANTHUM*. (*Linn.*)

This genus is distinguished botanically from all other cultivated grasses, in having two stamens and two styles in each floret.

71

1. **Anthoxanthum odoratum** (*Sweet-Scented Vernal Grass*).—Root fibrous, perennial; height fifteen or eighteen inches; flowers in May. Grows naturally on dry pastures. This grass yields but a scanty portion of herbage, and is not particularly relished by any kind of live-stock, except perhaps sheep; but cattle and horses do not refuse it when mixed amongst other grasses. It is remarkable for giving out a pleasant sweet smell during the process of drying, similar to that of the sweet-scented woodruff; and it is to the presence of this grass that hay from natural meadows owes its peculiar fragrance. It has been recommended to be sown in sheep pastures for the purpose of improving the mutton, a quality which it is said to possess, and which is founded on the fact, that pastures in which it naturally abounds are said to produce the finest mutton. On the whole, permanent pastures should not be sown without a mixture of this grass, particularly in parks and pleasure grounds, were it for no other reason than the pleasant scent which it gives out, not only when cut for hay, but also when the seeds become nearly ripe. Notwithstanding its dwarf growth and the close sward which it forms, it is but ill adapted for sowing on ornamental grounds intended for short grass, on account of its broad foliage, which has rather a coarse appearance. There is a variety of the Sweet Vernal-grass, sometimes termed *A. alpinum*, which is distinguished from the common by its leaves being broader, and its flowering later in the season, and more irregularly. Generally found in woods and shady places, particularly in alpine situations.—*La Flouve odorante* of the French.

* From *anthos*, a flower, and *xanthus*, yellow.

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XV. CYNOSURUS*. (*Beauv.*)

72 **1. Cynosurus cristatus** (*Crested Dog's-tail Grass*).—Leaves short, rather narrow, and tapering gradually to the points; root fibrous, perennial; flowers in June and July; height one to two feet. This grass seems to have a wide range of soils. Grows naturally on dry pastures, and also on those where the soil is damp and tenacious; and has been found to thrive well in irrigated meadows. Its stalks are not eaten by cattle, but allowed to stand and ripen seed, hence it is supposed undeserving of cultivation, as cattle will not eat it; but this applies only to the culms or stalks, as all domestic animals, and particularly sheep, are fond of the root leaves, which, although short, are produced in abundance. Sheep are said to be less liable to be affected by the disease called foot-rot, when fed on pastures containing a considerable portion of this, than on such as are composed of the more tender and soft-leaved sorts. In pasture lands where this grass does not naturally form a portion of the mixture, it is expedient to introduce a little of it; but, on the other hand, there are many pastures in which it is far too predominant. From its forming a close turf, and having rather fine foliage, it may be advantageously sown on bowling-greens, and other places to be kept under the scythe.—*Cretelle des Pres* of the French.

* From *kuon*, a dog, and *ouran*, a tail.

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XVI. BRIZA*. (*Linn.*)

73

1. Briza media (*Common Quaking-Grass*).—Root fibrous, perennial; flowers in June; grows naturally in light inferior and rather dry soils. The *B. media* possesses the remarkable peculiarities of thriving best on poor inferior soils, and from a given weight yielding more nutritious matter than any other grass indigenous to such soils. Owing, however, to the seeds not retaining their vegetating powers beyond a rather limited period, and the difficulty with which they are procured, its cultivation is attended with considerable disadvantage; for such soils as suit it best will not afford paying a high price for the seed, and its foliage is not produced in great quantities, owing to its shortness. There is a variety occasionally to be met with in moors, differing from the common in being of a much lighter and yellowish-green colour, but in other respects the same.—*La Brize tremblante* of the French.

* From *brizo*, to nod, on account of the quivering character of the spikelets.

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XVII. AIRA*. (*Willd.*)

74 **1. Aira cæspitosa** (*Tufted Hair-Grass*).—Leaves long and flat; root fibrous, perennial; height four feet; flowers in the beginning of August. Grows naturally on rather superior marsh or damp soils, forming large tufts or tussocks, as they are sometimes termed; and as the grass is seldom eaten by domestic animals, it becomes the business of the farmer to extirpate it as soon as possible, not only on account of its unsightly appearance, but because it occupies a considerable portion of the soil which would otherwise be capable of producing more valuable grasses, particularly as it is generally most predominant on the best soils. Sometimes, however, the *A. cæspitosa* may be advantageously sown as a cover for game, particularly rabbits and hares, and, in the neighbourhood of ponds and marshes, for snipes and other fowl which frequent those places. There is a variety of this grass termed *A. cæspitosa lutescens* (Yellowish Tufted Hair-Grass), distinguished from the common by having perfectly smooth culms, softer and much earlier foliage, not so liable to grow in tufts, of a dwarfer habit of growth, and the whole plant being of an agreeable yellowish-green colour. This sort seems to bear a much greater affinity to *A. alpina* than to *A. cæspitosa*, but differs from it also in having its leaves much broader and more flattened. It flowers about a month earlier than the common tufted hair-grass.

75 **2. Aira flexuosa** (*Waved Hair-Grass*).—Leaves short and bristly; root fibrous, perennial; height one and a half to two feet; flowers in July. Grows naturally on heathy soils; but as its chief produce consists in stems with very little foliage and few joints, and as cattle do not seem to relish the former, it is scarcely deserving of culture, except perhaps in small quantities as a mixture on moorish soils.

* Applied by the Greeks to *Lolium temulentum*, in reference to the deleterious qualities of the plant.

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XVIII. BROMUS*. (*Linn.*)

Bromus giganteus—See *Bucetum giganteum.*

1. **Bromus pratensis** (*Meadow Brome-Grass*).—Leaves long, slender, and pendulous; root fibrous, perennial; height two to three feet; flowers in July. Said to be a native of some parts of England. From the softness and great length of the foliage of this grass, it may turn out one of the most useful in the genus, but as yet its properties are not sufficiently known. 76

2. **Bromus secalinus** (*Rye-seeded Brome-Grass* or *Goose-Grass*).—This is a well-known weed in wheat and rye fields; is easily distinguished by its large hanging panicles, large drooping spikelets, and the seeds when ripe somewhat resembling rye. These seeds, when ground amongst flour and made into bread, impart to it a bitter taste, and are said to produce the same dangerous effects as those of the Bearded Darnel (*Lolium temulentum*). 77

3. **Bromus mollis** (*Soft* or *Downy Brome-Grass*).—A common weed in rye-grass fields; grows much taller than the rye-grass, with large branching drooping panicles. The seeds of *B. mollis* are said to produce giddiness in the human species and quadrupeds, and to prove fatal to poultry; and as the leaves or stalks contain but little nutritious matter, and occupy a considerable portion of ground, from its bushy habit of growth, to the deterioration of the hay crop, it becomes a desirable object to extirpate it, or rather to prevent its appearance; and the only effectual way of accomplishing this, is to make a proper selection of seed. In a sample of rye-grass seeds, it is very easy to detect those of *B. mollis* or *B. racemosus*, by their being larger, much broader towards the point, and generally terminated by a short awn. 78

4. **Bromus racemosus** (*Smooth Brome-Grass*).—Also a common weed in rye-grass fields; the distinguishing characteristics between it and *B. mollis* being in the absence of hair or down on its spikelets. 79

5. **Bromus Schrœderi** (*Schrœder's Brome-Grass*).—A grass of recent introduction, the qualities of which are not yet sufficiently known to warrant an opinion of its merits. 80

* The Greek name for a wild oat.

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XIX. HOLCUS*. (*Linn.*)

The two following species of *Holcus* are distinguished from all the rest of our common grasses, by the soft and woolly appearance of their panicles; those of *H. lanatus* assume a great variety of shades in colour, from a white to a beautiful red, but generally on a whitish ground.

81 **1. Holcus lanatus** (*Woolly Soft-Grass* or *Yorkshire Fog*).—Leaves downy; root fibrous, perennial; height one and a half to two feet; flowers in June and July. Grows naturally on inferior light soils, and particularly on such as have a little peat in their composition, and are of a dampish nature. On such soils it is generally found in a natural state. The *H. lanatus* yields a large bulk of aftermath, which, however, is not liked by cattle, either in a green state or when made into hay, owing, it is supposed, to its soft spongy nature, and not having a sufficiency of a subacid or saline taste; hence it has been recommended to sprinkle a little salt over it when stacking, or before giving it to cattle.

82 **2. Holcus mollis** (*Creeping Soft Grass*).—This is easily distinguished from the preceding species, by producing fewer culms, having looser panicles, longer awns, (hence it is sometimes termed *Bearded Soft Grass*), broader foliage, and powerfully creeping roots; grows naturally in a great variety of soils. It is possessed of no property to recommend it for cultivation; and, therefore, where it abounds naturally it should be extirpated to make room for superior sorts.

* From *helco*, to extract; the original plant having been supposed to possess the power of extracting thorns.

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XX. TRITICUM*. (*Linn.*)

83 **1. Triticum caninum** (*Bearded Wheat-Grass*).—Greatly resembling the common couch-grass, except in its spikes being more bearded, foliage more abundant, and having fibrous roots; grows naturally in woods as well as on the sea coast. The foliage is eaten with avidity by cattle, and from its bulk of produce might be reckoned a superior grass; but it is found very liable to be injured by rust. By paying proper attention to the selection of soils it is possible to overcome this disadvantage.

84 **2. Triticum repens** (*Common Couch-Grass, Dog-Grass, Quickens, &c.*).—This grass is too well known to require any description. One of the most troublesome weeds in arable land, and is only to be overcome by judicious fallowing or fallow-cropping. Sir Humphrey Davy found the roots to contain nearly three times as much nourishment as the stalks and leaves; they are sweet and greedily eaten by cattle and horses. By gathering them before being too much dried, and giving them a proper washing, they might, as food for domestic animals, considerably more than repay the trouble attending the operation.

* From *tritum*, rubbed, in allusion to the grain of this genus being originally rubbed down to make it eatable.

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XXI. HORDEUM*. (*Linn.*)

85 **1. Hordeum pratense** (*Meadow Barley-Grass*).—Foliage scanty; roots fibrous, perennial; height one and a half to two feet; flowers in June. Grows naturally in moist meadows; rare in Scotland. This grass is adapted for irrigation, and is also very nutritious; but its produce is inferior in bulk, and its seeds are not so easily procured as those of several other grasses equally suitable for such situations; it is also liable to rust, and, therefore, not deserving of much attention.

86 **2. Hordeum bulbosum** (*Bulbous-rooted Barley-Grass*).—Of recent introduction, and now under experiment.

* Supposed to be derived from *hordus*, heavy, in allusion to the comparative heaviness of bread made from barley.

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XXIII. MELICA*. (*Linn.*)

87 **1. Melica uniflora** (*One-flowered Melic-Grass*).—Leaves broad, thin, and tender-like, of a vivid green-colour; root fibrous, perennial; height one and a half to two feet; flowers in May and June; grows naturally in shady woods. As a fine grass for growing under trees, this may be cultivated with advantage; cattle are very fond of it. The *M. nutans* is another wood grass, in habit somewhat resembling this, but differing in having longer spikelets, containing each two or three fertile florets, and having its panicle less branched or nearly simple; it seems, however, of a more tender or delicate habit, and not likely to succeed so well under cultivation as the *M. uniflora*.

88 **2. Melica ciliata** (*Ciliated Melic-Grass*).—Root fibrous, perennial. Grows naturally and very abundantly in France on stony gravelly situations, and has been recommended for cultivation in such places in Britain.—*Le Melique ciliée* of the French.

89 **3. Melica altissima** (*Tall* or *Siberian Melic-Grass*).—Leaves tender, long and very broad, of a vivid green colour; height three or four feet; root fibrous, perennial; flowers in August. Native of Siberia. The Tall Melic-grass has been much recommended on the Continent. Cattle are found to be very fond of it, and it yields a considerable bulk of produce. Our own experiments prove that it does not stand well out in the end of the season.—*La Melique élevée* of the French.

* From *mel*, honey, the Italian name for the Great Millet.

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XXIV. MOLINIA*. (*Mænch.*)

This is a genus separated from that of *Melica* by modern botanists.

90 1. **Molinia cærulea** (*Blue Molinia* or *Melic-Grass*).—A smooth-stalked tufted growing grass, with a contracted bluish coloured panicle, which grows abundantly on some moors; it is remarkable for its culm or stalk (which rises to about a foot and a half in height) having no joints except one within an inch or so of the ground, consequently its foliage, which is short and hardish, is chiefly all produced from the roots. The culms are hard and tough, and in some parts of England are used for making brooms; it is also used in the Orkney and Zetland Isles by the fishermen for making ropes for their nets. On account of the toughness of the culms, and their want of joints, they might be used advantageously in straw-plait. The plant is not nutritious, and is seldom eaten by domestic animals.

* Named after J. Molina, a writer on Chilian plants.

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XXV. MILIUM*. (*Linn.*)

91

1. **Milium effusum** (*Wood Millet-Grass*).—Perennial; grows naturally in old woods and copses, and most frequently on rich vegetable soils composing the shelving and sloping banks of rivers, where it usually attains a height of from four to six feet. The merits of this the most elegant of British grasses have long been overlooked. The following description of it is from the Floragraphia Britannica:—"The panicles of this graceful and pretty grass are sometimes found near a foot long, and eight inches wide; the seeds are a favourite of numerous birds; and the abundance which it produces, together with its naturally preferring to grow in the cool and shade of trees, sufficiently recommend it as a grass of great utility in game preserves; and its elegance and soft green colour would form an ornament of no inconsiderable beauty in the shade of plantations and pleasure-grounds, where but few other plants will grow." According to Mr. A. Gorrie, Annat Cottage, its broad lively green foliage, which resembles luxuriant young wheat, appears early in spring. In June it sends up numerous stems four to six feet in height; and in July the panicles are richly stored with ripe millet-like seeds, which are greedily eaten by young pheasants. Every part of the grass is relished by cattle, and the aftermath comes away freely, even after the first crop has been allowed to ripen seed.

* From *mille*, a thousand, in allusion to the great number of seeds produced by it.

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XXVI. PANICUM*. (*Linn.*)

92 **1. Panicum maximum** (*Many-flowered Tall Millet* or *Guinea-Grass*).—Height varying from five to ten feet; panicle much branched and spreading, its length being often one foot and a half, and diameter at base one foot. Leaves numerous, long, flat, and, together with their sheaths, smooth; root perennial, and somewhat creeping. Naturalised in the West Indies and southern states of America, to which countries it is said to have been brought from the coast of Africa. Although found to endure the winters of this climate, yet it is by no means suitable for culture, being late in spring, and easily injured by autumn frosts; but it might form a valuable acquisition in such countries as Australia and New Zealand.

XXVII. PHALARIS†. (*Linn.*)

93 **1. Phalaris arundinacea** (*Reed-like Canary-Grass*).—Root creeping; height four to six feet; flowers in July. Grows naturally on alluvial soils, by the sides of rivers, lakes, pools, &c. According to the experiments of Sir H. Davy, this grass contains a considerable portion of nutritious matter; from its coarseness, cattle in general refuse it, but are said to eat it, if cut into chaff and mixed with other food. It yields a vast bulk of hay, which in some parts is found very convenient for littering cattle. The common *Gardener's Garter* is a variety of this grass.

* Either from *panis*, bread, or *panicula*, a panicle.

† From *phaleros*, brilliant, in allusion to the shining character of the seeds.

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XXVIII. ARUNDO*. (*Beauv.*)

94 **1. Arundo phragmites** (*Common Reed*).—This is the tallest of all the British grasses. It grows naturally by the banks of rivers, edges of pools, &c., but to greatest perfection on rich alluvial deposits which are occasionally flooded by fresh-water tides, where it is found of considerable importance for thatch. It has powerfully creeping and very deep roots, and becomes a troublesome weed when such places as it grows naturally upon are drained and subjected to cultivation. The panicles of this grass will dye wool of a greenish colour.

95 **2. Arundo donax** (*Cultivated Reed*).—Native of the south of Europe, where it is cultivated for a great many purposes; it supplies materials for looms, fishing-rods, &c., and is generally imported from Spain and Portugal. With us it grows to a great height (eight or ten feet) in a season, and its large broad foliage is very ornamental about fishing-ponds, &c, but our climate is too cold to allow of its arriving at maturity, or acquiring that hardness of texture which it does in warmer countries.

XXIX. TRIPSACUM†. (*Linn.*)

96 **1. Tripsacum dactyloides** (*Gama-Grass*).—Native of the south-eastern coasts of North America. Perennial. The Gama-grass is said to be so named in honour of a Spanish gentleman who introduced its culture into Mexico. Various accounts are given of the produce of this grass; from seventy to ninety tons of geeen hay, and from twenty to thirty tons of cured hay to the acre, are said to have been grown in North Carolina. Whatever may be the value of the Gama-grass in its native climate, that of Britain, judging from the result of our own experiments, seems unsuited for its proper developement; but its natural habits, and particularly its capability of withstanding excessive drought, entitles it, in an especial manner, to the attention of settlers in the Polynesian colonies.

* From *arundo*, a reed.

† Paxton derives it from *tribo*, to thresh, in allusion to the purpose to which the grain may be applied.

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XXX. GYNERIUM. (*Nees.*)

97 1. **Gynerium argenteum** (*Pampas-Grass*).—This plant is a native of Brazil and Monte Video. It is of recent introduction, and of no value as a forage plant. We take the following description of it from "Paxton's Flower Garden," Vol. 1: "This noble plant, now called the Pampas-grass, in consequence of its inhabiting the vast plains of South America so named, has been introduced within a few years through Mr. Moore, of the Glasnevin Garden. Although but a grass, it will probably form one of the most useful objects of garden decoration obtained for many years. In stature, it rivals the bamboo, being described as growing, on its native plains, several times as high as a man. The leaves are hard, wiry, very rough at the edge, not half an inch broad at the widest part, of a dull grey green colour, much paler below. They are edged by sharp points or teeth, a little less hard than the teeth of a file. The flowers appear in panicles from one and a half to two and a half feet long, resembling those of the common reed, but of silvery whiteness, owing to their being covered with very long colourless hairs, and themselves consisting of colourless membranous glumes and pales. The plant appears to be hardy." The specimen in our collection was grown by Mr. Cunningham, at Comely Bank, near Edinburgh.

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SECT. II.—LEGUMINOUS HERBAGE & FORAGE PLANTS.

Of the numerous genera belonging to this Section, the most important, at least to European agriculturists, is the genus

I. TRIFOLIUM*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Rosal Alliance of Lindley; Nat. Ord. Fabaceæ; Linn. Cl. 17, *Ord.* 4.

1° TRIFOLIUM PRATENSE.

COMMON RED OR PURPLE HEADED CLOVER OR TREFOIL.

Habit of growth upright and branching; flowers in June and July; colour generally reddish-purple, but of various shades, and sometimes even white flowered. The varieties of *T. pratense* may be divided into two classes, viz. the *Perennial* and *Biennial* sorts; the former of which comprehends those of most permanent duration, and such as are best adapted for sowing in permanent pastures; the latter such as are most suitable for alternate husbandry, from their being of shorter duration: to these, however, the term *Biennial* is not strictly applicable, as, under favourable circumstances, the most short-lived varieties are found to last for a series of years.

* From *tres*, three, and *folium*, a leaf—all the species of this genus having trifoliate leaves.

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TRIFOLIUM PRATENSE PERENNE.

PERENNIAL RED CLOVERS.

98 **1. Native Perennial Red Clover.**—This sort is so distinct in its general appearance from the common cultivated varieties of *T. pratense*, that some have supposed it to constitute a different species. Compared with the common Red Clover of the fields, its flowers, foliage, and stems, are in general darker coloured; leaflets narrower, and, together with the stems, much more downy or hairy, and roots more fibrous; it differs also in the form of the calyx, and in some other characteristics of minor importance. This sort grows naturally in old pastures, heathy moors, &c., and presents several varieties, differing slightly in colour and in habit of growth, but retaining more or less of the narrowness and woolliness of their foliage, and all agreeing in their permanency of duration.

99 **2. Common Perennial Red Clover or Cow-grass.**—The variety generally cultivated in this country under the above name, bears a good deal of resemblance to the biennial sort in its general habits and appearance, and differs from it only in having rather more woolly leaves, in being of fully more permanent duration, and in coming in flower a few days later; the seeds being higher priced than those of the common Red Clover, it becomes a matter of consideration with cultivators, whether the slight difference in their duration be a sufficient compensation for the additional cost.

100 **3. Duke of Norfolk's Cow-grass.**—This variety is of much more permanent duration than the common Red Clover, and is easily distinguished from it by being much darker coloured in its stalks, leaves, and flowers, having more fibrous roots, and being earlier by nearly a week.

101 **4. Perennial Red Clover of Argovie.**—This variety, *Le Trèfle d'Argovie* of the French, was originally introduced into France from Switzerland, where it is much cultivated. The French reckon it the most perennial variety which they possess, and as such cultivate it to a considerable extent. It is rather of a dwarf and more spreading habit of growth than any of the other varieties, its leaves and flowers are light coloured, and the former are generally marked by lightish coloured spots or blotches near the base of each leaflet.

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102 **5. Perennial Red Clover of Germany.**—This variety was received in 1834, from Mr. A. C. Fisher, Inspector of the Botanic Gardens at Gottingen, under the name of *T. pratense perenne.* It very much resembles the last, but differs from it in being a few days later, and rather more luxuriant in its habit of growth.

TRIFOLIUM PRATENSE.

BIENNIAL RED CLOVERS.

103 **Common or English Red Clover.**—In addition to their shortness of duration, this and the rest of the biennial clovers are distinguished from the more permanent sorts by their roots being more fusiform (thick and fleshy, or carrot-shaped), and by their leaves and stems being generally smoother or less hairy. That variety more particularly denominated English Red Clover is of a strong luxuriant habit of growth; its seeds are large, and in sample are of a bold purple colour. It is more particularly adapted for rather superior soils. Like the other varieties, it derives its name from the country in which it is grown; and from being often the produce of foreign seed, it in such cases partakes to a certain degree of the qualities of that particular variety from which it may have been produced.

Of the other varieties may be mentioned *Holstein, German, Cologne, Juliers* or *Dutch, Flemish, French, American,* and *Normandy* Red Clovers; and of these the most important are the Juliers or Dutch, and French, varieties. The former of these is of a light colour, of a strong and coarse-like habit of growth, and succeeds better than most of the others on strong soils of an inferior description, particularly such as are of a dampish nature; its seeds are easily distinguished by their being large, but not so plump or well filled, and of a yellower colour than those of most of the others, arising from the humidity of the climate in which it is produced. The French Clover is remarkably smooth in all its parts, leaflets roundish, and altogether of a rich green succulent appearance; the seeds, which are chiefly from the southern departments of France, are small, plump, and have a considerable portion of purple in their colour. It is best suited for superior soils in sheltered situations. The Normandy Red Clover, (*Trèfle de Normandy* of the French) is from the north of France,

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and appears to be of a strong luxuriant habit of growth; it is of a dark green colour, produces comparatively few flowers, and is some days later than the common sorts. The American variety has smaller seeds, in which the yellow colour is predominant, and is not quite so luxuriant in growth; its stalks are hard and small, and it is considered of more permanent duration than any others of the biennial kinds.

2° TRIFOLIUM REPENS.

WHITE OR DUTCH CLOVER.

104 Colour of the flowers white, or sometimes tinged with very light pink; leaflets inversely heart-shaped, often having a black or darkish coloured blotch near the base; flower-stalks without leaves, upright; stem creeping on the ground and rooting at the joints; root fibrous, perennial; flowers throughout the summer months and beginning of autumn. Grows naturally in pastures in a great variety of soils and situations. The White Dutch Clover is too well known as a pasture plant to require any further description.

3° TRIFOLIUM HYBRIDUM.

HYBRID OR ALSIKE CLOVER.

105 Is so named from being intermediate in its appearance between the two preceding species. Heads globular, stalked; stems branching, and in habit of growth not so upright as those of Common Red Clover; root fibrous, perennial; flowers in June and July. The *T. hybridum* is now well known as Alsike Clover. The seeds reached us originally from Sweden under this name. It is deservedly in repute as a valuable perennial clover, and well adapted for growing in this country; but hitherto, from the comparative high price of the seeds, it has not received a fair trial in field culture. From the result of our experiments it is proved to thrive on such soils as are termed by farmers *clover-sick*, and must, were it for this quality alone, prove a most valuable acquisition to our cultivated field plants.

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4° TRIFOLIUM MEDIUM.

ZIGZAG CLOVER OR MARL-GRASS.

106

Of all our native clovers this bears the greatest resemblance to the common red sort, *T. pratense;* but it is easily distinguished by its more rigid zigzag stems, narrower and darker green spotless leaflets, and above all, by its creeping roots, and being always found growing in considerable patches instead of solitary plants like the other, and on very dry banks, tops of old walls, &c. From the name of Cow-grass being sometimes applied to this as well as to the perennial variety of *T. pratense*, they have often been confounded with one another. It has been recommended to sow the zigzag clover in mixture with the permanent pasture grasses, on account of its permanency of duration; but its advocates must either have taken it for the true Cow-grass, as before mentioned, or had not been properly acquainted with its nature and habits; for it can only be considered as a pestiferous weed in places where it is naturally abundant, from the circumstance that cattle seldom eat it, or at least in small quantities, except their pasture be very bare; while its powerfully creeping roots, which displace every other plant within their reach, must prove very hurtful to pasture lands.

5° TRIFOLIUM ALPESTRE.

OVAL-HEADED CLOVER, ALPINE CLOVER.

107

This species resembles in some measure the preceding, with which it is often confounded. It is more fibrous-rooted; stem upright, straight, and scarcely branched; heads always in pairs, and more elongated or oval-shaped. Native of Hungary, Austria, and several other countries of Europe. The culture of *T. alpestre* has been recommended by several continental writers, but it does not seem possessed of properties sufficient to recommend it to the notice of cultivators, in this country at least, particularly as its stalks are very hard, and its foliage scanty. From its large and beautiful purple heads of flowers, it is in repute as an elegant ornamental plant.

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6° TRIFOLIUM INCARNATUM.

SCARLET, CRIMSON, OR ITALIAN CLOVER.

108 **1. Common Crimson Clover.**—Spikes or heads oblong, tapering, and nodding to one side, of a beautiful bright scarlet colour when in flower; stem pretty upright, much branched; the whole plant covered with short wool or hair; flowers in June and July; height eighteen inches to two feet; root annual. Native of Italy. The *T. incarnatum* has long been known in this country amongst horticulturists as a beautiful border annual. But it is only within these few years that its cultivation has been recommended as yielding an excellent and abundant crop of fodder for feeding cattle. It has been grown with much success in England, particularly in the southern counties; but hitherto its culture has not been attended with the expected success in most parts of Scotland. Whether this want of success should be attributed to the effects of climate, or to the mode of culture, has not yet been satisfactorily ascertained. The advantages to be derived from the cultivation of *T. incarnatum* are, that when sown in autumn it may be cut and cleared from the ground in the beginning of June following, and the land fallowed for wheat or spring corn; it forms a valuable green food for cattle at an early period of the season, and, if cut when in full flower, it yields a more abundant crop, and makes a superior hay to that of common clovers, at least it is more readily eaten by horses. There can be no doubt but the south of England is better suited for the growth of the crimson clover than any part of Scotland, from the circumstance that the corn crops are much earlier removed; consequently the young plants have more time to attain strength before the winter season sets in. It does not follow, however, but that it may be grown with advantage in the more favourable districts of Scotland, were its culture fairly understood.

109 **2. Late-flowering Crimson Clover.**—This variety (*incarnatum tardif* of the French) was first brought into notice by M. Juery of Toulouse. Its characteristics are lateness of flowering, and tallness or vigour of growth; qualities which must recommend it to growers of the common Crimson Clover, for succession or late crops. Sir John Robinson has the merit of first introducing

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this variety into Scotland, having, in 1837, presented a quantity of its seeds, as well as those of the common Crimson and Moliner's clovers, to the Highland and Agricultural Society; the results of a comparative trial with which were, that the plants of this came into flower when those of the common were nearly over, and on being cut their produce was fully a third heavier than either of the others.

7° TRIFOLIUM MOLINERI.

MOLINER'S CLOVER.

110 This clover has a great resemblance to *T. incarnatum* in general habit and appearance, and is on that account considered by some as only a permanent variety. It differs, however, in the colour of its flowers, which is a light pink or French white; it is also earlier in arriving at maturity, and more of a biennial nature, and, therefore, better suited for the climate of Scotland. It is cultivated in some parts of France and Switzerland.

8° TRIFOLIUM ALEXANDRINUM.

ALEXANDRIAN OR EGYPTIAN CLOVER.

111 Stem branching, and nearly upright; colour of the flowers light sulphur yellow or French white; root annual; height eighteen inches to two feet; flowers in June and July; native of Egypt. As an agricultural plant, the introduction of the Alexandrian is more recent than that of the Crimson Clover, compared with which it is of a taller and more straggling habit of growth, and not so well clothed with leaves; it is also a few days earlier in flowering. It has been suggested that this clover might be sown in spring along with the Italian Rye-grass for summer feeding, instead of common tares, particularly since it has been found to be less injurious to the soil.

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9° TRIFOLIUM FILIFORME.

YELLOW SUCKLING CLOVER OR TREFOIL.

112 Heads small and loose; colour of the flowers bright yellow; flower-stalks slender or flexuose; stems procumbent, leaflets scarcely having foot-stalks. This clover has been recommended for growing on dry gravelly or rocky places, which are incapable of supporting the more valuable grasses and clovers; but, from the small bulk of produce which it yields, the propriety of its cultivation is questionable, and, besides, cattle are not found to relish it if they can procure more nutritious food. Although generally termed an annual, *T. filiforme* is often found of biennial duration, especially when grown in medium good soil, or when eaten down by cattle or sheep.

10° TRIFOLIUM PROCUMBENS.

HOP TREFOIL.

113 This species grows on similar soils and situations with the last, and, like it, has also been recommended for cultivation. It is, however, possessed of still less merit, as cattle are generally found to refuse it; and it may be seen in dry pastures, towards the end of July, when the seeds are ripe, completely withered or dried, and so forming a very unsightly contrast with the green verdure around; it is, moreover, very liable to be injured by mildew. *T. procumbens* is readily distinguished from *T. filiforme* by its more compact, upright, and branching habit of growth, and by its close globular shining heads of yellow flowers. Its average height is from four to six inches.

11° TRIFOLIUM FRAGIFERUM.

STRAWBERRY-HEAD CLOVER.

114 Heads globose, upon long foot-stalks; colour of the flowers light pink; calyx after flowering inflated, and reddish coloured towards the period of ripening (which gives the heads the appearance of strawberries); stem creeping; root

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fibrous, perennial. Grows naturally on light dry sandy soils, particularly in the vicinity of the sea. In habit of growth the *T. fragiferum* approaches that of *T. repens*, but is rather more creeping and easily distinguished by its strawberry-like heads. The cultivation of this species has hitherto met with little attention; but it might be grown with advantage as a mixture in permanent pasture on partly consolidated sands near the sea-coast.

12° TRIFOLIUM ELEGANS. (*Savi.*)

ELEGANT CLOVER.

115

In the Bon Jardinier for 1842, this species is noticed as having been found indigenous, and for some years past cultivated in the Department de la Nievre, under the name of *T. hybridum*, to which it bears a considerable resemblance, but is described as being of weaker growth, and less in all its parts, and having a dull rose-coloured flower, and a pale green foliage; the leaflets being also marked like those of the common white and red clovers. These two species also differ in the soils which they naturally inhabit, *T. elegans* being only found on those of a poor silicious or stiff ferruginous nature, while the *T. hybridum* seems to delight in those of a rich aluminous or calcareous description. As no experiments have been made on a large scale, it is impossible to say how far it may prove suited for cultivation in Britain.

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II. MEDICAGO*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Rosal Alliance of Lindley; Nat. Ord. Fabaceæ; Lin. Cl. 17, *Ord.* 4.

Two only of the five enumerated species of this genus are cultivated in Scotland, viz. the *M. lupulina* and *M. sativa*, and the latter but to a limited extent. In certain localities the *M. maculata* is certainly deserving of more attention than what it has hitherto obtained.

1° MEDICAGO LUPULINA.

English—Yellow Clover. | *French*—La Luzerne Lupuline.

116 This plant (known also as Black Medick and Nonsuch) is too well known to require any description, having been cultivated in mixture with red clover and rye-grass, for a great length of time. Its seeds, which are produced in much greater abundance, are consequently cheaper than those of any of the other clovers, and it is questionable whether this circumstance may not contribute to the extensive cultivation which it receives, more than any other superior merit. Although the produce is bulky, cattle are not generally fond of it, either in a green or dry state, and only eat it with a seeming relish when mixed with more nutritious and esteemed food; on which account it should enter but sparingly into mixtures.

* From *medike*, a name given by Dioscorides to a Median grass.

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2° MEDICAGO SATIVA.

English—LUCERNE | *French*—LA LUZERNE CULTIVEE OU FOIN DE BOURGOGNE.

117

Stem erect, branching, smooth; flowers in racemes or clusters, generally of a purplish colour; root thick and branching, penetrating very deep into the subsoil, perennial; height about three feet; flowers in June and July. The cultivation of Lucerne is of unknown antiquity in Italy, Spain, and the south of France; it is likewise cultivated in Persia, and several other countries of Asia; also in Peru, and elsewhere in South America; in the Canadas, and the United States. In Britain, a great deal has been said in its favour as an early plant for yielding fodder before the red clover, and its cultivation has often been attempted, and attended with various degrees of success. The climate of Scotland has been considered by some as too cold for the growth of lucerne; but the numerous failures which have taken place may be more justly attributed to an improper choice of soil than to any other cause. The soils which appear most congenial to it are those of a very light sandy or dry nature, as for example those near the coast, where it is found to thrive well, although exposed to the direct influence of the sea breeze, and to be fit for cutting at least a fortnight earlier than common rye-grass and red clover. Provided, however, the subsoil be always dry, and particularly if it be of a calcareous nature, it is not indispensable that the surface-soil be very sandy, as lucerne in such cases is found to grow freely on medium black loams; but lands which have a damp subsoil, or are of a tenacious nature and damp in winter, are totally unfit for growing it, even although they may be, in the general acceptation of the term, very good soils. If proper attention be paid to the young plants, they will yield a considerable crop the succeeding season; but it is the third season after sowing at least before they arrive at full maturity; and afterwards they will continue to produce good crops for eight years, and even more, provided they receive a good top-dressing occasionally in winter, and are kept free from couch-grass and other perennial weeds.

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3° MEDICAGO SATIVA *var.* RUSTICA.

English—BROWNISH-FLOWERED LUCERNE. | *French*—LA LUZERNE RUSTIQUE.

118 This is supposed to be a sort of intermediate variety between the Common and Yellow Lucerne, an opinion which seems to be founded chiefly on the colour of its flowers, which are of a dull yellowish-brown. Compared with the last species, this sort produces longer and slenderer shoots, which are more prostrate or lying upon the ground. Plants of this sort have been growing for several years in our Experimental Grounds, and are found uniformly to yield a greater bulk of fodder than the Common Lucerne; but as yet it does not appear to be much cultivated, even in France.

4° MEDICAGO FALCATA.

English—YELLOW LUCERNE. | *French*—LA LUZERNE FAUCILLE.

119 This species differs from the common principally in three particular characteristics: viz. in being of a strong or more woody upright habit of growth; in the colour of its flowers, which is bright yellow; and in its pods, which are only bent or sickle shaped, instead of being spirally twisted like those of the Purple or Common Lucerne. The cultivation of the Yellow Lucerne is chiefly confined to Switzerland, and the more mountainous parts of France. It possesses no superior advantage over the common, except in thriving on inferior soils; and is certainly of less value as food for cattle, on account of its hard and coarse woody habit of growth.

A species of *Medicago* presented by Mr. A. Gorrie, the seeds of which were gathered in North America by Mr. P. Shirreff, Mungoswells, bears a considerable resemblance to the *M. falcata*, but differs from it in several minute botanical characteristics. It does not, however, appear to be more deserving of cultivation.

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5° MEDICAGO MACULATA. (*Linn.*)

SPOTTED MEDICK OR HEDGEHOG PLANT.

120

Stems reclining or trailing, and much branched; flowers small, yellow, and generally in pairs; pods closely spirally twisted, so as with the sharp curved spines, which are thickly arranged on their exterior margin, to form globular bristly balls, slightly flattened at the ends. Annual; native of Britain, Europe, South America, &c. The sandy grounds towards the sea in many parts of South America, which, in the dry season, present the appearance of sterile wastes, are, on the return of rain, almost immediately covered with the luxuriant verdure of this and other allied species, so as to form rich sheep pastures; but their prickly pods often prove a considerable annoyance to the animals, by becoming so completely enrolled in their wool, as only to be separated by considerable labour in picking. The plant vegetates and grows freely with us from seed imported from Buenos Ayres, seemingly not at all influenced by the change of climate.

There are several other species of the genus *Medicago* which yield a good deal of herbage, and apparently deserve cultivation, but cattle are found to reject them, as is supposed, from their having a bitter and disagreeable taste. Of these may be mentioned *M. muricata*, *M. cretacea*, *M. scutellata*, &c.

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III. LOTUS*. (*Linn.*)

Belonging to Class Exogens, or Dicotyledons; Rosal Alliance of Lindley; Nat. Ord. Fabaceæ; Lin. Cl. 17, *Ord.* 4.

1° LOTUS CORNICULATUS.

English—Common Bird's-foot Trefoil.
French—Le Lotier cornicule, ou Trefle cornu.

121 Flowers eight or ten, generally of a bright yellow, but sometimes orange-coloured, especially before being fully expanded; stem decumbent, smooth; root thick and fusiform, perennial; flowers about the 20th of June, and continues till the end of August. Height from six inches to one foot. Grows abundantly on dry elevated pastures and heathy soils. This plant is well deserving of cultivation on light dry and high elevated inferior soils, where it will yield a greater bulk of herbage than any of the cultivated clovers. It is highly nutritious, and eaten with avidity by cattle. From the great depth to which its roots penetrate, it is not liable to be injured by drought, and is thereby enabled to retain its verdure after the grasses and other plants are burnt up.

2° LOTUS MAJOR.

Greater Bird's-foot Trefoil.

122 This species grows naturally in moist situations, by the sides of ditches, damp hedges, and bushy places, and attains its greatest luxuriance in soils which have a portion of peat in their composition. It is distinguished from *L. corniculatus* by its more luxuriant habit, also in the form of its roots, which are fibrous and creeping, while those of the latter are thick and fusiform, char-

* From *lotos*, a name given by Theophrastus; the true lotus is *Zizyphus Lotus*.

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acteristics which both retain when cultivated in any soils, or under any circumstances. The principal distinction, however, is in its seed being scarcely one half the size of that of *L. corniculatus*, and of an olive-greenish colour when ripe, while that of the latter is of a dark brown or almost black colour. In a growing state they may be easily distinguished by the leaves of *L. major* being closer and rounder, and, when in flower, by having compacter heads, with more numerous and smaller flowers.

1. Lotus villosus.—Only a villous or downy-leaved variety of *L. major*, which grows better on good dryish soils than the smooth-leaved variety. Both of these, with several intermediate varieties, may be seen growing naturally on damp soils by the sides of hedges, ditches, &c. 123

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IV. MELILOTUS*. (*Tourn.*)

Belonging to Class Exogens or Dicotyledons; Rosal Alliance of Lindley; Nat. Ord. Fabaceæ; Linn. Cl. 14, *Ord.* 10.

1° MELILOTUS OFFICINALIS.

COMMON MELILOT.

124 Pods two-seeded and rough; flowers yellow, and disposed in long loose one-sided clusters or racemes; foot-stalks small, sharp pointed, and undivided; stems upright and branching at the base from three to five feet in height. Generally termed an annual or biennial, but is often of four years' duration; grows naturally in dry pastures and waste places; flowers in July. Cattle in general are very fond of this Melilot when cut in a young and tender state, but, like all the rest of the genus, when allowed to arrive at full flower, its stalks become so hard and woody that the tops and leaves only are fit for being eaten. It might be cultivated to advantage on poor dry soils, either alone or in mixture with some of the grasses or other herbage plants; and although not well suited for hay, on account of its hard and woody nature, and the small bulk of its foliage when dried, yet a slight mixture of it is found to impart to the whole crop an agreeable sweet scent, similar to that of the sweet-scented vernal grass (*Anthoxanthum odoratum*). There is a variety of this species cultivated in France under the name of *M. officinalis altissima*, which grows rather stronger, and is later in flowering than the common sort. It is to the *M. officinalis* that the famous Gruyere Cheese owes its flavour; the flowers and seeds, after being dried, are bruised or ground and mixed with the curd before pressing.

* From *mel*, honey, and *lotus*, that is, honey-lotus.

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2° MELILOTUS MACRORHIZA.

English—SIBERIAN MELILOT | *French*—LE MELILOT BLANC DE SIBERIA.

This species, which is a native of Hungary, differs from the preceding in having white flowers; long thick carrot-shaped roots; generally one-seeded pods; grows considerably taller, and is rather shy in flowering. This species, like the former, is best adapted for growing on light dry soils, and is cultivated on such to a considerable extent in some parts of the Continent, particularly on the light sandy coasts of Holland, and some parts of France, where it is sometimes sown in mixture with *Vicia biennis*. 125

3° MELILOTUS CŒRULEA.

English—BLUE-FLOWERED MELILOT OR SWEET TREFOIL.

French—LE MELILOT BLEU, LOTIER ODORANT, TREFLE MUSQUE.

This species is only of annual duration, and is distinguished from all others by its blue-coloured flowers. *M. cærulea* is well known in our flower borders under the name of Sweet Trefoil, but its cultivation for cattle food is as yet chiefly confined to Germany. It is of rapid growth, and might be sown in fields where the common clover may have partly failed; but should be cut before being in full flower, as its large hollow tubular stalks become very hard and woody afterwards. 126

4° MELILOTUS LEUCANTHA.

1. Melilotus leucantha major *or* **Bokhara Clover.**—This plant formed the subject of a paragraph which in 1838-9 went the round of the agricultural and several other periodicals, intitled "New Era in Agriculture," and describing it as a *Tree Clover*, a few seeds of which had just been brought to England from Bokhara by a gentleman, who stated, that in that country it attained a height of fourteen feet, and yielded several cuttings per annum of highly nutritious food for cattle and horses; also that its bark yielded a fibre 127

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similar to and used for the same purposes as that of hemp, &c. The Bokhara Clover is a large growing variety of the *M. leucantha*, which was known in the south of Russia, and other parts of the Continent, for some years prior to its introduction into Britain. The specimen in our Collection, about twelve feet in height, was grown at Summerfield, near Edinburgh, but plants eighteen feet in height have been produced in our Experimental Grounds. When intended for feeding, the plants should be cut down when little more than a third of their full height, as their stems afterwards become very hard or woody. Like the more common species of Melilot, this should be treated as a biennial, and sown or planted in rows not less than a foot distant and fully nine inches apart in the rows.

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V. ONOBRYCHIS*. (*Tourn.*)

Belonging to Class Exogens or Dicotyledons; Royal Alliance of Lindley; Nat. Ord. Fabaceæ; Linn. Cl. 17, *Ord.* 4.

1° ONOBRYCHIS SATIVA.

COMMON OR CULTIVATED SAINFOIN.

128

Flowers in spikes, on long footstalks, of a beautiful pink or flesh colour; stems nearly upright; roots subfusiform, and penetrating to a considerable depth, perennial; height two to three feet; flowers in June and July. Grows naturally in light chalky soils in various parts of England. Although a native of England, the Sainfoin is said to have been originally introduced as an agricultural plant from France; and is now considered the most important leguminous herbage and forage plant in the calcareous districts of both countries, and particularly on the poor dry thin chalky districts in the south of England. A very judicious method of raising this plant, which is practised in some parts, is to sow it with about half the quantity of barley or other grain usually sown for a full crop, which gives it the advantage of being shaded and kept moist during the first summer, without the chance of the plants being weakened from the closeness of the corn crop. In cases where the barley or corn is drilled, the Sainfoin should be drilled across the field, or at right angles with the drills of the corn crop. The usual period of duration of Sainfoin, in a profitable state, is from eight to ten years in chalky soils, and seven or eight in those of a sandy or gravelly nature; but although the plants lose a good deal of their vigour at that age, they have been known to exist for nearly a hundred years. The duration of the crop may, however, be increased by judicious top-dressing. In Scotland the cultivation of Sainfoin has hitherto been little attended to, partly, no doubt, from an opinion that it is

* From *onos*, an ass, and *brykco*, to gnaw; being a favourite food of the ass.

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only suited for chalky soils; but it has been ascertained to succeed well on almost any soil, provided it be sufficiently dry, and particularly on such as are of a calcareous sandy nature, or are incumbent on limestone: and on such of these as are too thin or dry for producing good crops of corn or grass, it might be grown with very beneficial results.

A variety of Sainfoin, under the name of *O. sativa* var. *bifera*, was introduced by us in 1834; but although found to grow faster, and produce flowers earlier than the common sort, its cultivation has been neglected.

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VI. ANTHYLLIS*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Rosal Alliance of Lindley; Nat. Ord. Fabaceæ; Linn. Cl. 16, *Ord.* 6.

1° ANTHYLLIS VULNERARIA.

COMMON KIDNEY VETCH.

Flowers in crowded heads, generally yellow; stem prostrate towards the base, about one foot to eighteen inches in height; grows naturally on very dry soils, and particularly on such as are of a calcareous nature; root thick, long, and descending, perennial. The Common Kidney-Vetch does not yield much produce, but is eaten with avidity by horses, sheep, and cattle, as also by hares and rabbits, and might therefore be introduced into mixtures for very dry soils. 129

* From *anthos*, a flower, and *ioulos*, down, in allusion to the flowers being usually downy.

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VII. ASTRAGALUS*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Rosal Alliance of Lindley; Nat. Ord. Fabaceæ; Linn. Cl. 17, *Ord.* 4.

1° ASTRAGALUS GLYCYPHYLLUS.

SWEET MILK-VETCH OR BASTARD LIQUORICE.

130 Flowers yellowish-green coloured; stem prostrate towards the base, about three feet in height; roots long and very thick, penetrating to a great depth in the soil, perennial; native of Scotland, but not common; grows naturally on superior soils by the sides of streams, &c. The leaves and roots of this plant possess a sweet taste, somewhat resembling liquorice, but in the former mixed with a slight degree of bitterness. It yields a heavy crop, and cattle are said to become fond of it after being used to it for some time.

* From *astragalos*, vertebra, or talus, the seeds being squeezed into a squarish form in one of the species.

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VIII. VICIA*. (*Linn.*)

Belonging to Class Exogens, or Dicotyledons; Rosal Alliance of Lindley; Nat. Ord. Fabaceæ; Linn. Cl. 17, *Ord.* 14.

The seeds of most of the Viciæ may be eaten as food by man; but they are generally too small, or produced too sparingly, to admit of their culture for this purpose being attended with any beneficial results.

1° VICIA SATIVA.

English— VETCH OR COMMON TARE. | *French*—LA VESCE COMMUNE.

Flowers generally in pairs, without foot-stalks, and of a red or purplish colour; pods more or less downy or hairy; root annual. In a wild state *V. sativa* is found (but in most parts rather scarce) growing by hedges, road-sides, and in stony places where not very dry, as in rubbish heaps about quarries, &c. The wild variety, however, differs from those generally cultivated, in being of much dwarfer and more slender habit of growth, and also in having much smoother leaves and stalks. Those sorts in general cultivation are the Common or Summer Tare, and the Winter Tare, which resemble one another in general appearance; but the latter variety is distinguished by being usually of smaller growth, by its pods being more smooth and cylindrical, and containing a greater number of seeds, and by being in its general habit more like the wild variety. A third variety, called the White-seeded, is also occasionally grown.

To insure a good crop of tares, the soil is not only required to be of a superior nature, but also well cleaned or free from root and annual weeds; and it is also requisite in most cases to apply an extra quantity of manure. They should never be allowed to remain on the ground until nearly ripe, except when intended for seed, as they prove highly injurious to the soil, being considered the most impoverishing of all our commonly cultivated leguminous crops.

1. Common or Summer Tare.—This variety presents in the appearance of

* From *vincio*, to bind together, the species having tendrils by which they bind themselves to other plants.

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its seeds much diversity of size, arising from soil and culture; the larger sizes are better known in many places by the name of Vetches, whilst the smaller samples are denominated Tares, and are either sown as green food for cattle or for their ripe seed. In the former case they are generally sown with oats or barley, so as to come in for use between the first and second crops of grass. The practice of sowing one or other of the cereal grasses amongst tares is to be highly recommended; not only as it insures a greater bulk of produce, from the stems of the grasses rising above the tares, but from their stems acting as supports to the tares, and these serving to prevent them lying on the ground, and so becoming injured in damp weather. Cattle are also fonder of the fodder in a mixed than in an unmixed state.

132 **2. Winter Tare.**—When intended for early spring food, it is sown in autumn, either alone, or, what is far preferable, in mixture with rye. It has been ascertained that winter tares repeatedly sown in spring, acquire more of the tender nature peculiar to the summer sort. Therefore it is essential for cultivators to sow such seed as is *not only the produce of the true winter tare, but of it sown in autumn.* When winter tares are sown for their seeds, the general practice has hitherto been to sow them alone; but since the introduction of the winter beans it may be more advisable to sow them in mixture,—the seeds, as well as those of the spring or summer sort, being easily separated from the beans when threshed by means of a properly sized riddle.

133 **3. White-seeded Tare or Lentil of Canada.**—This variety (*V. sativa alba*) is grown in France and Canada for its seed, where it is known as *La Vesce blanche, ou Lentille du Canada.* It differs from the Common Tare in being of dwarfer growth, and producing a much greater quantity of seeds, which are of a white or cream colour, and possess a much milder taste. In France and Canada the seeds are used as a substitute for peas, both green and ripe, in soups and other dishes; they are also ground and made into bread; but in this case their flour is generally mixed with that of wheat or other grain. The White Tare has been known in Scotland for a considerable time; but, from only being grown for soiling cattle, owing to its dwarfness of growth compared with the Common Tare, its culture was never extensive.

134 **4. White-flowered or Hopetoun Tare.**—This variety (*V. sativa flore albo*)

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bids fair in a short time to supersede the old summer tare, from a field of which it was selected by Mr. Patrick Sheriff, late of Mungoswells, the originator of the Hopetoun Oat and several other improved varieties of cereal grains. The produce, both in seeds and bulk of haulm, compared with any of the other varieties, is fully double. Its seeds are of a light bluish or green colour, and possess little of the strong taste peculiar to the common tare, so that, in addition to its other properties, these may become at least equally useful with the White-seeded variety, or Canadian Lentil, for culinary purposes.

5. Canadian Vetch or Tare.—This variety (*V. sativa canadensis*) was received in spring 1840, from Mr. George Shepherd, seedsman and nurseryman, Montreal; and is distinguished from the commoner varieties, by the dull pale or pinkish colour of its flowers, as well as smooth shining light green foliage, and dwarf bushy habit of growth, which, together with its being later in flowering, must preclude its being cultivated in preference to the others. 135

2° VICIA BIENNIS.

English—BIENNIAL VETCH OR SIBERIAN TARE.
French—LA VESCE BISANNUELLE, OU VESCE DE SIBERIE.

Flowers about eight or ten together, on long peduncles or foot-stalks, of a light purplish-pink colour; leaflets small, smooth, and sharp pointed, about ten or twelve in each leaf; tendrils long, and generally branching; pods smooth and flattened, from an inch to an inch and a half in length by about two-eighths in breadth; seeds small, round, and of a dark dull green colour; habit of growth slender, and branching; height six to eight feet, generally of annual duration when allowed to ripen seed on stiff wet soils, but will grow two seasons under favourable circumstances; flowers in July and August; native of Siberia; introduced to Britain about the year 1753. 136

This Vetch has been much recommended for cultivation, as it not only grows to a great height, and yields a large bulk of fodder, but it remains green throughout winter in defiance of the most severe frosts. Although recommended by Miller about 1759, its culture has not been attended to in this country, but it is grown in some parts of France, and particularly in Germany,

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on light soils. Those who cultivate it in the latter country find it advisable to sow it in mixture with one or other of the Melilots, as, from its tall and slender habit of growth, unless supported, it is apt to become lodged and much damaged in damp weather, and for this purpose the biennial species of the genus *Melilotus* are exceedingly well adapted, owing to their strong upright habit of growth and similarity of duration.

3° VICIA CRACCA.

TUFTED VETCH.

137 Peduncles, or footstalks of the flowers, longer than the leaves; flowers in a closely imbricated, elongated, one-sided cluster or raceme of a bluish or purple colour; leaflets lanceolate, and, together with the stems and peduncles, slightly hairy, and of a hoary light bluish-green colour; roots small and creeping; height four to five feet. Grows naturally by the sides of plantations, in hedges, &c.

This Vetch yields a considerable bulk of fodder, which is greedily eaten by cattle, and is considered as forming a more nutritious and healthy food than the Common Tare, from containing a much smaller proportion of watery matter. It thrives best on a soil of medium texture, but will grow well on those of a light sandy nature, and also on strong clays, provided they be well drained, and the moisture not allowed to stagnate about the roots in the winter or spring months.

4° VICIA SYLVATICA.

WOOD VETCH.

138 Flowers arranged as in the last species, of a variegated pink-like colour; leaflets elliptical; tendrils large and branching; whole plant almost smooth; root very slightly creeping, perennial; height four to six feet; flowers in July. Grows naturally in stony places, amongst trees and bushes, also on strong damp tilly inferior soils; it is also found growing luxuriantly within the influence of the sea breeze, and even when subjected to the salt spray arising from the waves. Cattle are fond of the Wood Vetch as fodder; but although it

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yields a large bulk of herbage on soils and in situations where few other plants will thrive, its cultivation has been hitherto neglected. One great hindrance to the procuring of its seeds in large quantities, is the irregularity with which they ripen, and the liability of the ripe pods to drop or become detached from the stalks; so that, in order to obtain the full crop of seeds, they require to be gathered with the hand as they arrive at maturity.

5° VICIA LUTEA.

YELLOW-FLOWERED SEASIDE VETCH.

Pods solitary, without footstalks, reflexed, broad, flattened, and hairy; stem branching and very prostrate, except when supported by other plants; flowers of a dull yellowish colour; root fibrous, not strictly perennial, but lasting for several years; height two to three feet. Grows naturally on stony or gravelly situations on the sea coast, and can only be valued, in an agricultural point of view, as being capable of growing in such a situation, and as affording rather more produce than the common clovers grown under similar circumstances. One obstacle to the cultivation of the perennial vetches, particularly *V. cracca* and *V. sylvatica*, for herbage, is the want of strong upright plants of similar duration to grow amongst them for their support, and which might also be cut at the same time for cattle food. For this purpose it has been recommended to sow common beans, which may do very well during the first and second seasons after sowing*, but as the vetches become older, they increase in luxuriance of growth for at least several years; while, on the other hand, beans, or any other annual plant, will become weaker, not only from being repeatedly sown on the same soil, but from the soil becoming too hard from not being ploughed or worked. In the case of the Wood Vetch, this latter objection might be partly overcome, by growing it in drills at least two feet apart, the interstices being dug or ploughed every year, and a little manure added if required, and then beans or any other strong growing annual plants might

139

* There can be little doubt but the best, as well as the most natural, season for sowing the native vetches, particularly the perennial sorts, is when their seeds are ripe, or early in the autumn; although that operation may likewise be deferred till spring.

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be sown in the middle of each space. This mode of culture is, however, not so applicable in the case of *V. cracca*, from its more running or creeping roots. However, on those soils and situations where they grow naturally, they may form part of mixtures in permanent pastures.

6° VICIA SEPIUM.

BUSH VETCH.

140 Flowers on short foot-stalks, about four or six together, generally of a red or dull purplish colour, lightest and slightly striped on the upper petal or standard; leaflets broad and roundish, smaller towards the point of the leaf, and, together with the flowers, thickest or most abundant at the point of the shoot; root slightly creeping, perennial; average height about two feet. Grows naturally in shady places, and generally on superior and rather dry soils. This is another perennial vetch, but from its rather dwarf and close bushy habit of growth, it does not require the aid of other plants for support to the same extent as the last-mentioned sorts. Cattle in general are very fond of the Bush Vetch, and it seems naturally well adapted for sowing along with the superior wood grasses, under trees, or in such shady places where the common clovers will not succeed well; but, like most of the other perennial vetches, its seeds are difficult to procure in large quantities, and are, consequently, high in price.

7° VICIA VILLOSA.

VILLOUS OR HAIRY VETCH.

141 At first sight this species is apt to be mistaken for *V. cracca*, which it very much resembles in its flowers and foliage, but differs essentially in having an annual root, while that of the other is perennial. The whole plant of the *V. villosa* is also more villous or hairy, of a taller and more branching habit of growth, and produces a much greater quantity of pods, which are also larger and broader than those of the last-mentioned sort. The *V. villosa* is of slender growth, and relying, like the *V. cracca*, for support on whatever stronger plants

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may be growing beside it; for which purpose the Sweet Melilot (*Melilotus cærulea*), or some such strong growing annual, might be introduced with advantage in the case of this and the other slender growing annual vetches. It also possesses the same advantages as the *V. cracca*, of containing less watery matter than the Common Tare, and being greedily eaten by cattle or horses, either in a green or dry state. Compared with the Common Tare, the *V. villosa*, when sown in spring, comes away rather slower at first; but its actual weight, or bulk of produce from a given space of ground, when fully grown, may be reckoned nearly double that of the other.

8° VICIA PSEUDO CRACCA.

BASTARD TUFTED VETCH.

This species also differs from the true Tufted Vetch in having annual roots, and from the preceding, in being of dwarfer growth, having smoother and finer foliage than either, and also in having much lighter-coloured flowers. It is a native of the south of Europe, and has been recommended for field culture, but its merits are as yet little known in this country. 142

9° VICIA ATROPURPUREA.

DARK PURPLE-FLOWERED VETCH.

Peduncles many-flowered, shorter than the leaf; leaflets dark green and slightly villous; pods short, broad, and pretty well filled, containing three or four seeds; height three feet; root annual. Native of the north of Africa. This is also recommended for field culture by the French; but from its coming from such a warm country as the north of Africa, it has not been found to succeed so well in this climate as some of the preceding. 143

10° VICIA ANGUSTIFOLIA.

NARROW-LEAVED VETCH.

Flowers reddish-coloured, single or in pairs, without foot-stalks; pods of a shining black colour when ripe; leaflets narrow, and terminated abruptly at 144

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the points, smoothish and dark green; root annual; height three to four feet. Grows naturally in woods and hedges in Germany. Yields a large portion of foliage, and stands well in the end of the season, not being so easily injured by frosts as the clovers and common tares; and, from its being much less soft and juicy than the latter, it is not so liable to be damaged in damp weather.

11° VICIA TRICOLOR.

THREE-COLOURED VETCH.

145 This species is easily distinguished by its flowers, which are without peduncles or foot-stalks; being of a jet black colour on the alæ or wings, inclining to a dull brown towards the posterior extremity, and the rest of the flower being of a green colour; height two to three feet; annual. Native of America. This vetch was first recommended by Mr. Loudon, in his "Gardener's Magazine," as a new plant, which might be grown with advantage in this country as food for cattle. It is dwarfer in growth than some of the other annual vetches, but yields a greater quantity of seed.

12° VICIA NARBONENSIS.

NARBONNE OR BROAD-LEAVED VETCH.

146 Pods either without or with very short foot-stalks, one or two and sometimes three together, large, flattish, and of a darkish colour when ripe; leaflets about six on each leaf, large, roundish, and entire; colour of the flowers reddish purple; stems much branching, thick, soft, and hollow, of rather a stout habit of growth, and not relying much upon other plants for support; height two to three feet. Native of France; annual. It is cultivated in Germany, and some other parts of the Continent, as a substitute for the Common Tare. It yields a large and close-growing crop of succulent fodder, of a strong beany taste, and is at first not well liked by cattle; however, if sown in autumn, it stands our winters well, and grows very fast in the early spring months, at

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which period cattle are fonder of it than they are when the clover season comes on. It is found to retain its greenness in winter in a remarkable degree, and to yield an abundant crop in the spring months.

13° VICIA SERRATIFOLIA.

SAW-LEAVED VETCH.

147

This species is a native of Hungary, and so like the former in its general appearance, as to be only considered a variety. It differs chiefly in having its leaves and stipules deeply indented or serrated, while those of the former are entire, or almost so. It is cultivated in some parts of the Continent as the preceding.

14c VICIA PLATYCARPUS.

LARGE-PODDED VETCH.

148

Pods solitary, without foot-stalks, large, broad, and inflated; leaves resembling those of the *V. narbonensis;* stems strong, and nearly upright; height one and a half to two feet. Seems much inferior to the two last in bulk of produce.

The last three species may be said to constitute a class of *Vicia* by themselves, from the broadness of their leaves, their strong habit of growth, and the thickness and succulency of their stems. They seem to form, as it were, the connecting link between the Tares and other slender climbing sorts, and the *V. faba*, or Bean, which has been separated by modern botanists into a genus by itself.

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IX. LATHYRUS.* (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Roxal Alliance of Lindley; Nat. Ord. Fabaceæ; Linn. Cl. 17, *Ord.* 4.

1° LATHYRUS LATIFOLIUS.

BROAD-LEAVED EVERLASTING PEA.

149 Flowers reddish or purple, many together on long peduncles; stem about six feet in length; perennial; flowers in July and August. Grows naturally in woods, but rare in Britain in a wild state; it is, however, often cultivated in gardens as an ornamental climber.

2° LATHYRUS SYLVESTRIS.

NARROW-LEAVED EVERLASTING PEA.

150 Stem winged, from four to five feet in length; perennial. Grows naturally in woods, but also rare in a wild state.

These two Everlasting Peas yield an extraordinary bulk of foliage and stems, and hence have been recommended for culture as cattle food. Both produce but little seed, which scarcely ripens in this country, except in early situations; they may, however, be propagated with facility by dividing the roots, were their culture to a great extent found beneficial; but cattle seem to have a dislike for the produce, particularly in a green state, which might perhaps be overcome by habit. With regard to providing for their support by means of introducing stronger growing herbage plants, the same remarks are applicable in the case of the Everlasting Peas as in that of the *Vicia sylvatica*, &c. (see page 90).

* From *la*, augmentative, and *thouros*, anything exciting, in allusion to the medicinal qualities of the seeds.

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3° LATHYRUS PRATENSIS.

YELLOW OR MEADOW VETCHLING.

151

Flowers bright yellow coloured, from two to eight on very long peduncles or foot-stalks; pods of a blackish colour when ripe; tendrils with two long pointed leaflets; stem two to three feet in height; root powerfully creeping, perennial; flowers in July. Grows naturally either in moist or dry soils, but generally on such as are of good quality.

Cattle in general eat this species with avidity, hence it has been recommended for being grown on very dry soils. The creeping nature of its roots, however, presents a considerable objection to its culture, except when it is intended to remain permanent.

4° LATHYRUS HIRSUTUS.

English—ROUGH-PODDED VETCHLING. | *French*—LA GESSE VELUE.

152

Each tendril with a pair of linear lanceolate leaflets; standard of the flowers crimson, other parts pale; pods rough or hairy, broad and slightly flattened, containing five or six small round rough blackish-coloured seeds; height two feet; root annual; grows naturally in the South of England, but rare. The cultivation of this species has been attempted in some parts of France, and is found to succeed pretty well as a winter vetch, being sown in autumn, and cut for use early in the ensuing season.

5° LATHYRUS CICERA.

English—FLAT-PODDED VETCHLING OR CHICK PEA | *French*—LE GESSE CHICHE.

153

Flower red; tendrils two-leaved; pods ovate, compressed, channelled at the back; height two to three feet; annual; flowers in June and July. Native of the South of Europe. In this country the *L. cicera* has not hitherto been subjected to culture as an agricultural plant; but in the South of France it is grown pretty considerably in some districts for the purpose of feeding live-

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stock, particularly sheep. Its seeds also are occasionally used like those of *L. sativus*, being ground and the flour mixed in small quantities with that of the cereal grains, and made into bread; but when used alone, it is even more injurious to health than the last-mentioned.

6° LATHYRUS SATIVUS.

English—LENTIL OF SPAIN, OR CHICKLING VETCH.
French—LA GESSE CULTIVEE.

154 Grows to the height of about three or four feet, attaching itself to branches &c. for support, in the manner of peas. The leaves are small and grassy-like, flowers solitary and abundant, about half the size of those of the Common Pea, of a bright blue-colour generally, but changing in some varieties; pods when fully grown about an inch and a half in length, by three-fourths of an inch in breadth, flattened, with two wing-like appendages running along the back, containing generally two-flattish and rather irregularly-shaped seeds, of a dun or brownish colour, and of rather an agreeable taste.

Notwithstanding the pernicious qualities assigned to the *L. sativus* by Duvernoy, as its causing rigidity of the limbs, delirium, and other dreadful effects, to such an extent that its use was prohibited by an edict of George Duke of Wurtemberg, in 1671, which was confirmed and enforced by his successors, yet it is still grown in some provinces of France, and elsewhere. Its seeds are used in soups, and the meal or flour mixed with that of the cereal grains, and made into bread; it is also given to hogs, and other live stock, but generally in mixture, and is grown in various parts, as green food for horses and cattle.

There is another variety, termed the White-flowered Chickling Vetch, which differs from the common sort in nothing except in the colour of its flowers and seeds, which are white, and the foliage is also a slight shade lighter in colour.

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X. ERVUM*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Rosal Alliance of Lindley; Nat. Ord. Fabaceæ; Linn. Cl. 17, *Ord.* 4.

1° ERVUM ERVILIA vel ERVILIA SATIVA.

English—CULTIVATED ERVILLA | *French*—L'ERS ERVILLIER.

155

This species is distinguished from others of the genus, by its upright branching habit of growth, requiring no support from other plants; also by its small jointed-like swollen pods, which contain two to five whitish seeds, about the size of those of the Common Tare; its leaves contain eight to fourteen pairs of leaflets, and are terminated by a very small tendril. The average height of the plant does not exceed eighteen inches.

This species is cultivated in some parts of the Continent, both for its seeds and green or dried culms and leaves, which are considered highly nutritious, and are given to milch cows and working animals. The seed being ground to a coarse flour, which is mixed with bran and a little salt, is made into cakes, which are eaten by horses and cattle, but found less suitable for feeding swine. The herbage is also considered so nutritious as to recompense for the smallness of its bulk, and is seldom given to animals except in mixture. It is found to thrive well on very poor sandy soils.

2° ERVUM HIRSUTUM.

COMMON OR HAIRY WILD TARE, MOUSE TARE, FETTER, &c.

156

Flowers small and whitish; pods hairy, generally two-seeded, stem two to three feet long, weak, straggling, and relying on other plants for support; annual. Grows naturally on dry soils, amongst bushes, by sides of hedges,

* Supposed to be derived from the celtic *erw*, tilled land; some of the species are a pest in arable land.

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and often too abundant in wheat fields, both in this country and on the Continent; when such is the case it proves highly injurious to the grain crop, and can only be got rid of by always taking care to prevent its seeds becoming ripe. The liability of its seeds to become shaken or dispersed when ripe, and the length of time they are known to retain their vegetative powers when buried in the soil, together with the smallness of its bulk of herbage compared with common tares, renders the cultivation of this plant not worth attending to; but in cases where it abounds naturally, it forms excellent food, either for cattle or horses.

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XI. ULEX.* (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Rosal Alliance of Lindley; Nat. Ord. Fabaceæ; Linn. Cl. 16, *Ord.* 6.

1° ULEX EUROPÆUS.

COMMON WHIN, FURZE, OR GORSE.

157

The common whin is too well known to require any specific description; it has been employed for an unknown length of time in this country for feeding horses, cattle, and sheep during the winter months. Whins are given to horses and cattle in a green state, after undergoing a process of thrashing or bruising, until the prickles are so far reduced or deprived of their acute points, that the animals can eat them with perfect safety or without endangering their mouths. Sheep, on the other hand, are turned out to feed on whins only when the snow is too deep for allowing them to get at the grass; and although they are found to fatten and thrive much better on the former, yet they seldom touch them until forced to do so from not getting at the grass. When once accustomed, however, to the whins, they continue to eat them in greater or less quantities, according to the state of the pasture, until the young grass grows in the beginning of summer; hence, when whins are plentiful in the winter pasture, shepherds always look with anxiety for a snow storm in the early part of that season.

For bruising whins, the flail was the only instrument formerly used, but several machines have now been invented for that purpose.

In this climate the whin will not succeed beyond 900 feet above the level of the sea; but many sheep-walks might be improved by introducing it on moors under that altitude. The plant has been used sown on the tops and in the face of mud fences as a cheap and efficient hedge on dry and poor soils, where thorns

* Supposed to be derived from the Celtic *ac*, a point, in allusion to the prickly branches.

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will not prosper. For sowing a single line a mile in length 3lb. to 4lb. of seed will be sufficient. Some poor uplands might be profitably laid under whins sown broadcast, with or without a corn crop, at the rate of 20lb. or 24lb. an acre, to be mown annually for winter green food.

158 The *Doubled Flowered Whin*, a variety of the above, which is propagated by cuttings, has been recommended for hedges, where spreading of whin seed in the neighbouring ground should be guarded against.

2° ULEX STRICTA VEL HIBERNICA.

UPRIGHT OR IRISH WHIN.

159 This differs from the last in being of a much more upright and compact habit of growth, and in its shoots and prickles being so soft and tender, that cattle of any kind can eat them without their undergoing the operation of thrashing or bruising. One great objection, however, to its extensive culture is, that it is not capable of being propagated by seed, as it produces few flowers; but its superior merits may, on many occasions, repay the attention requisite in cultivating it by cuttings of the young shoots, which are found to root freely by being planted about the end of August in a shady situation (as at the back of a wall) amongst clean sand, or sand with a slight mixture of any light rich soil in its composition. When so treated, they will produce roots in spring or summer following, and may be finally planted out in the succeeding autumn or spring months.

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XII. CYTISUS.* (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Rosal Alliance of Lindley; Nat. Ord. Fabaceæ; Lin. Cl. 16, *Ord.* 6.

CYTISUS vel SPARTIUM SCOPARIUM.

COMMON BROOM.

160

This well-known plant has been recommended for sowing on sheep pastures, for the purpose of affording those animals a supply of winter food; but, although they are found to eat it down when growing naturally within their reach, yet from its excessive bitterness and inherent diuretic qualities, it may be questioned whether they do not take it rather by way of medicine than for actual nourishment. The propriety of introducing it to a great extent is doubtful, particularly as it is found to produce bad effects when eaten in large quantities.

* From *Cythrus*, one of the Cyclades, one of the species being first found there.

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XIII. GENISTA*. (*Lamarck.*)

Belonging to Class Exogens or Dicotyledons; Rosal Alliance of Lindley; Nat. Ord. Fabaceæ; Lin. Cl. 17, *Ord.* 6.

1° GENISTA PILOSA.

HAIRY GREENWEED.

161 This is a small, slender branched yellow flowering shrub, having its pods, leaves, and young shoots, downy all over. Native of some parts of England, and found abundantly in the pastures in various parts of France, where its cultivation has been much recommended, from its being well adapted for growing on light sandy soils, and much sought after by sheep.

2° GENISTA TINCTORIA.

DYER'S GREENWEED.

162 This species bears some resemblance to the last in its habit of growth, but differs materially in the smoothness of its young shoots and foliage. Grows naturally in some parts of Scotland, and abundantly in England; it has also been recommended for sowing in sheep pastures, but with less propriety than the former. It affords a fine yellow dye.

* From the Celtic *gen*, a small bush.

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SECT. III.—CRUCIFEROUS AND OTHER HERBAGE AND FORAGE PLANTS.

I. BRASSICA*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Cistal Alliance of Lindley; Nat. Ord. Brassicaceæ; Linn. Cl. 15, *Ord.* 2.

Much has been said and written recommendatory of the Brassica or Cabbage tribe being more extensively subjected to field culture in this country, for feeding cattle, sheep, swine, and even poultry; but, judging from any trials which have been made, as well as from the natural habits of the whole tribe, their culture seems only likely to be attended with any chance of decided advantage on the most superior class of soils, particularly on such as are of rather strong texture, and where an abundant supply of manure can be had; and even in many such cases it is questionable how far they ought to be preferred to turnips, over which, however, they possess the advantage of *improving* rather than *deteriorating* the quality of the milk of cows fed upon them, and also of growing freely on lands which are too stiff in texture for the growth of any sort of turnips.

In field culture the Cabbage tribe may be planted in March, or in May and June, the plants in the former case being the produce of seeds sown in the previous autumn, and in the latter case they may be from seeds sown in February or March immediately preceding. The young plants should be dibbled in on the top of drills prepared in the same manner as is usually done for turnips, with the addition of a slight rolling, to level or smooth down the

* From the Celtic *bresic*, a cabbage.

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tops; the drills may be made at the distance of two feet, and the plants placed at the distance of fifteen or eighteen inches in the row, increasing or diminishing the width and distance, according to the size and habit of growth of the variety. At the distance of two by one and a half feet, 14,500 to 15,000 plants will be required for an imperial acre. The after-culture of hoeing and weeding is the same as is required in other drilled green crops. The Cow-Cabbage, Kale, and other open headed varieties, will yield a regular supply of leaves from the time when the plants are from one to two feet in height, which are obtained by stripping off the under tiers successively, until the entire crop be taken; but in the case of the other cabbages, stripping off the leaves, if at all attempted, should be done with more caution, otherwise the swelling and firming of the heads will be materially checked. These last should be all off the ground before the winter sets in with severity, otherwise the outer leaves are apt to become injured, in which case they, as well as decayed leaves at any period, should never be given to milch cows, as they impart a disagreeable taste to their produce. The open-headed sorts, however, may be allowed to remain on the ground with less danger of being injured, until they shew symptoms of running to seed, after which period the plants, together with all the Brassicaceæ, become very exhausting to the soil, a disadvantage which, in rather a considerable degree, is said, and seemingly not without good cause, to attend the Cow-Cabbage, and some of the other large varieties, at all periods of their growth.

1° BRASSICA OLERACEA.

COMMON OR WILD CABBAGE.

163 Root hardish and fusiform; leaves always smooth, of a glaucous colour, somewhat thick or fleshy; flowers in May and June; biennial. Native of Britain, but confined chiefly to cliffs on the sea-coast of England. When in flower, the *B. oleracea* bears a considerable resemblance to the common corn-mustard or charlock (*Sinapis arvensis*), except in the colour and smoothness of its foliage. As an agricultural plant it is entirely undeserving of attention, were it not from the circumstance of its being generally considered as the origin from which all our cultivated varieties of the cabbage tribe are derived,

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notwithstanding the remarkable diversity in their appearance. From this circumstance the *B. oleracea* and its cultivated varieties are often alluded to as being a remarkable proof of the advantages resulting from a careful cultivation, improvement, and selection of the most deserving varieties of any of our cultivated economical plants. Nor can a more suitable example be adduced than to compare this insignificant weed-like plant of the sea-coast with the gigantic growth of the Tree or Cow-Cabbage, the large close head of the Drumhead Cabbage, or with the different forms or habits of growth apparent in the Brussels Sprouts, Red Cabbage, Cauliflower, Kohl-Rabi, and numerous other varieties. To attempt anything like a description of the whole of these, is, in the present instance, thought to be quite unnecessary. The following, therefore, are such as either are, or may be, most advantageously cultivated as food for live-stock, particularly cattle and pigs.

1. Tree or Cow-Cabbage.—Habit of growth, strong and upright, with numerous branches, and rather small and thin, smooth, vivid green leaves; stalk and branches very hard or woody, except towards the point; root large and spreading; average height about five feet; but in very deep rich soil, the plants will often attain double that height before beginning to shoot or run to seed. In Jersey, and some of the northern departments of France, where this variety is chiefly cultivated, the longest of the stalks are used for supporting kidney beans, peas, &c., and also as cross-spars for the purpose of supporting the thatch or roof of the smaller class of farm buildings, cottages, &c., and when kept dry are said to last upwards of half a century. This variety is also known by the following names:—*Chou Chevalier, Chou à Vaches, Branching Cabbage, Jersey Kale,* &c. 164

2. Thousand-headed Cabbage.—This is also a branching sort, bearing a considerable resemblance to the Cow Cabbage, but of a more close or compact habit of growth, with rather darker green and more rough or wrinkled leaves. 165

3. Common Plain-leaved or Scotch Kale.—Habit of growth upright, unbranched, leaves very large, thickish, and close set; plain and light red or purplish coloured; average height above two feet. This variety was formerly very extensively cultivated by the cottagers in various parts of Scotland, but 166

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has of late become rather scarce, arising, no doubt, from inattention in growing the seed, allowing it to become mixed or hybridised by being raised too near that of German Greens and other varieties of the same species. When genuine this is an excellent sort, considered either as a pot vegetable or for growing as food for milch cows and other cattle, pigs, &c.

167 **4. Green Tall German Greens.**—Average height about four feet; stems unbranched; leaves numerous, of medium size, and very much curled, which is the distinguishing characteristic of what may be denominated the tribe to which the term German Greens is applied. The epithet *tall* is applied to this and the following varieties here mentioned, from their habit of growth, compared with most of the other sorts, which are much dwarfer, and, although considered finer in quality, are far deficient in quantity of produce to either of the tall sorts.

168 **5. Red or Purple Tall German Greens.**—Differing only in colour from the last.

169 TO 172 **6. Scotch Drumhead or Late Cabbage.**—This, and all the other varieties to which, in this country at least, the term Cabbage is generally understood to apply, are distinguished by their plain smoothish leaves, and, before running to seed, by the terminating leaves being collected or bundled together, so as to form a solid-like hard or compact globular or conical shaped head. The Drumhead or Late Cabbage is too well known to require any description. The same remark may be also applied to the *Scotch Grey*, and *Large York* and *Sugar-loaf Cabbages*, which four (and the two first in particular) are generally reckoned the best adapted for extensive field culture of all the numerous tribe generally designated Cabbages.

173 **7. Large Savoy, Cape, or Drumhead Savoy.**—The Savoys resemble the Cabbages in the solid-like globular form of their heads, but differ in their leaves being very rugose (rough or coarsely wrinkled). The variety here mentioned is considered as one of the hardiest, as well as the most productive of leaves, and may therefore be reckoned as one of the best for field culture; and its merits may be stated as rather superior to the Early York or Sugar-loaf Cabbages, with this addition, that the Large Savoy is considerably hardier, and better adapted for use in winter than either.

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8. Kohl-Rabi, Large Red and Green Field Sorts.—Kohl-Rabi differs most essentially from all the other varieties of *B. oleracea*, in having its stems towards their upper extremity swollen out into a large globular pulpy mass, in consistence and texture somewhat resembling a Swedish turnip. From and near the summit of this globular mass, the leaves, which are smooth, of various shapes and shades of colour, proceed. The varieties of Kohl-Rabi are numerous; but those of most importance for field culture are the large red and green sorts, which are grown to a considerable extent on some parts of the Continent, particularly in the Low Countries and the North of France, for feeding cattle, and especially milch cows, a purpose for which they seem admirably adapted, as, from their having a taste similar to the leaves of others of the species, they are found not to impart any of that peculiar disagreeable taste to the milk, which it acquires when the cows are fed on turnips.

*** Besides the varieties above enumerated, many others have been recommended by speculative agriculturists as being eminently suitable for field culture, such as Brussels Sprouts, Brocoli, and even Cauliflower; but although, when grown to any considerable extent for the market, the waste leaves, &c., of these and others may be beneficially used as cattle food, yet, for growing for that purpose alone, in their relative values, compared with most of those mentioned previously, they will be found deficient.

2° BRASSICA CAMPESTRIS.

SUMMER RAPE, WILD NAVEW, COLZAT OR COLZA.

175

Root tapering, hard, and woody; root-leaves lyrate and roughish when young; those on the stem clasping or subcordate, oblong; all somewhat fleshy, and of a dark green colour, with a glaucous bloom; seeds larger, similar to those of the Swedish turnip; biennial. A somewhat doubtful native, found abundantly in some districts of England, but chiefly on and near the borders of fields, hence supposed to be the offspring of cultivation. This species is sometimes termed *B. campestris olifer*, from its being reckoned the best sort of rape for

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cultivating for oil, and also to distinguish it from the *B. campestris rutabaga*, or Swedish Turnip, which is only a variety of this species. The name of Summer Rape is acquired from its arriving earlier at maturity than the next sort, as also from being generally supposed less capable of withstanding severe winters, being therefore better adapted for a summer or autumn than for a spring crop.

3° BRASSICA NAPUS.

COMMON OR WINTER RAPE, COLE-SEED, &c.

176 Root tapering, hard, and woody; leaves all smooth, glaucous, thickish, or fleshy, those of the root lyrate, and those of the stem clasping or cordate; biennial. Found in similar situations with the last species, from which it is easily distinguished when young, by having smooth leaves, while those of the other are roughish. Its seeds are also generally larger than those of the *B. campestris;* but this is not to be depended upon as a distinguishing characteristic, as the size of seeds in this, as in most other plants, are liable to be materially altered from the soil on which they are grown, or previous culture of the seed stock.

177 A very superior variety of this species, under the name of *B. napus major*, is much cultivated in Alsace, and is highly deserving of attention on account of the largeness of its leaves.

4° BRASSICA PRÆCOX.

EARLY RAPE, SMOOTH-LEAVED SUMMER OR ANNUAL RAPE of the Germans.

178 This species, also termed *Kohl-reps*, differs from the preceding in being only of annual duration, consequently running to seed much sooner, and in being less hardy when sown in the end of the season. Its lower stem-leaves are also more lyrate, and its seed-pods more erect; native of the Continent. Said to have been first introduced into this country about the year 1812.

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5° BRASSICA RAPA.

ROUGH-LEAVED SUMMER ANNUAL, OR TURNIP RAPE.

179

Root small, hard, and fusiform; root-leaves lyrate, vivid green, and without the least appearance of that glaucous bloom for which the foregoing sorts are so distinguished; stalk-leaves slightly glaucous, smooth, or nearly so, lower ones generally lobed or cut, upper almost entire. Annual when sown in the earlier part of the season. Seeds small, and similar to those of the Common Turnip, of which it seems to be either a variety, or the origin from which the latter has been derived.

Although the rapes be generally included amongst oil plants, yet their importance in some parts of Britain, as plants sown entirely for the feeding of domestic animals, entitles most of the sorts to a place amongst forage and herbage plants; one or two, however, which are hitherto less known, and which are supposed to be particularly distinguished for the oleiferous properties which they possess, are described in Division V, under the Section intitled "Plants cultivated for their Oils." The place which rape should occupy in a regular rotation, is the same as that allotted to turnips or potatoes; but it is likewise sown and found to answer very well (when the soil is of superior quality) as a first crop on newly reclaimed or broken-up grass land, to be eaten off in the end of autumn and succeeding winter by sheep. In some parts of England, where the corn crops are removed from the field at an early period, they are often succeeded by a crop of rape, which is either sown on the stubble and covered in by a slight harrowing, or after the ground has received one ploughing, which method is always preferred when it can be done with convenience, and provided the soil be not too soft in texture, and too wet for allowing the crop to be eaten off by sheep during the winter months. Although this method of sowing rape has often been tried in Scotland, it has never been found to succeed so well as in England, owing to the comparative lateness of the period at which the previous crop is removed from the ground. The only sorts, however, the growth of which has hitherto been attempted in both countries, are

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B. campestris and *B. napus:* and it is, therefore, not at all improbable that *B. præcox* or *B. rapa*, (sorts which, although they yield a smaller supply of produce, yet arrive much sooner at maturity), might be found to succeed corn crops with more advantage in Scotland than the two first-mentioned species, particularly *B. napus*. In some districts rape is found a very beneficial crop for sowing in June or beginning of July, on land that has previously undergone a course of summer fallowing. The crop in this case may either be eaten off with sheep, in the months of September and October, and the ground immediately ploughed for wheat, or cut with the scythe and ploughed down as manure.

When rape is sown for the purpose of being eaten off with sheep, both the broadcast and drill systems are adopted; but when intended to be cut for feeding cows or other cattle in the house, the drill system is often preferred. Rape will succeed well on all good turnip soils, and also on such as are rather too stiff in texture for the latter. The commonly cultivated sorts of rape succeed well by being transplanted; and although this method is sometimes followed on the stubbles in England, yet it is attended with too much labour to be a profitable system, further than perhaps filling up any vacancies which may occur in the general crops.

Besides the green leaves used for feeding sheep and cattle, they, as well as horses, are found to eat the smaller dry twigs or branches of the plants with avidity after the ripe seed has been thrashed out, and the thicker portions of the stalks may be employed as litter. This practice of disposing of the straw or offal yields a greater return of manure, and is therefore deservedly recommended as preferable to that of burning it, as is generally done by such as grow the seed for the oil manufactory.

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II. BUNIAS*. (*R. Brown.*)

Belonging to Class Exogens or Dicotyledons; Cistal Alliance of Lindley; Nat. Ord. Brassicaceæ; Linn. Cl. 15, *Ord.* 1.

1° BUNIAS ORIENTALIS.

ORIENTAL BUNIAS OR HILL MUSTARD.

Habit of growth upright, producing numerous branches, with yellow flowers; root leaves linear, dark green and roughish, those of the stems few and small; root spreading, whitish, thick, and fleshy; height about four feet; perennial; native of the Levant, from which it was introduced into Britain about the year 1731. 180

The field culture of this plant has been greatly recommended by several French agriculturists; but, although it is perfectly well suited to the climate of this country, it does not seem possessed of merits sufficient to entitle it to much attention. The principal objections to it are the small quantity of leaves it produces, which are very hard, and the tardiness of its growth after being cut. It seems to thrive best in a rich, dry, and rather light soil.

* From *bunios*, a hill, in allusion to its habitat.

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III. CICHORIUM*. (*Tourn.*)

Belonging to Class Exogens or Dicotyledons; Campanal Alliance of Lindley; Nat. Ord. Asteraceæ; Linn. Cl. 19, *Ord.* 1.

1 CICHORIUM INTYBUS.

COMMON OR WILD CHICCORY.

181 Flowers blue, in pairs, each having very short, or almost no foot-stalks, numerous, and placed upon very long branching stems; leaves of various shapes and shades of colour, but generally more or less hairy and runcinate (having their lobes hooked back); roots rather thick and fleshy; height, when in full flower, from four to eight feet, and often more; perennial; grows naturally in and about the edges of fields.

Although the cultivation of Common Chiccory has been a good deal recommended as food for live stock, particularly cattle and swine, yet it seems not to have hitherto been followed to that extent to which its superior merits entitle it. It thrives best on rich soils, and such as are rather light and well drained. It may be sown alone, either in drills or broadcast, and mixed in small quantities, amongst grass, clover, and other seeds for pasture lands. When the drill system is adopted, which in most cases is to be preferred, the rows may be at from fifteen to twenty inches distant, to admit of hand and horse hoeing, and the plants should stand at least six inches distant in the rows; the sowing may be deferred till the month of May, as, if this be done at an early period of the season, the plants are apt to commence running to seed in the autumn months, whereby they will be materially weakened, and the first crop of the succeeding season considerably lessened. The operation of thinning should be attended to when the plants are very young, and they should be pulled with the hand, in soft weather, in preference to cutting them with

* This name was adopted by the Greeks from the Egyptians.

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a hoe, as the roots are very tenacious of life, and will push out new buds, although cut a good deal below the surface. One considerable crop of root-leaves may be gathered in the end of autumn the first season; and three, four, or even more, may be obtained under very favourable circumstances during each of the four or five seasons following, particularly if the first cutting be completed about the time of the plants developing their flowers, when the average height will be from three to five feet. In any case, the cutting should not be deferred until the plants arrive at a more advanced state, as the stalks then become hard, and the future vigour of the plants impaired. The broadcast system should only be attempted where the soil is previously in a high state of fertility, and completely free from root and annual weeds. The period of duration from the time of sowing will be from four to six years, if cut regularly before arriving at full flower, after which they may be ploughed up and the ground fallowed to get clear of the roots; if, however, the seed be allowed to ripen, the plants will lose much of their vigour even after the first crop.

There are numerous varieties of Chiccory, none of which seem possessed of much permanency in their characters when raised from seed, at least so far as accords with present experience; the most distinct, however, is one with long thick roots, distinguished as Coffee-chiccory, which will be found noticed in Division V.

2° CICHORIUM ENDIVIUM.

COMMON ENDIVE.

182

Peduncles or foot-stalks of the flowers twin, one short, with three or four flowers, and one long, generally only one-flowered; annual; height two to three feet. Said to be a native of the East Indies; introduced about the year 1548. The flowers of the endive are similar to those of the common chiccory, from which it is, however, easily distinguished, not only by its annual nature and other characteristics given above, but also by its having much more slender branches or stalks, on which are comparatively few and small stalk leaves. There are numerous varieties of endive cultivated as a salad plant in gardens,

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distinguished by the names of plain-leaved, curled-leaved, green broad-leaved, &c. Although eaten by cattle, and with the same apparent relish as common chiccory, yet none of these varieties yield a sufficient quantity of leaves to entitle them to extensive culture. As most of them, however, stand the weather in the earlier winter months better than lettuce, a small quantity will be found of advantage by the cottager to plant after early potatoes have been dug, for affording fattening and wholesome food for pigs; for this purpose the plain, curled, and green broad-leaved varieties are best adapted.

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IV. LACTUCA*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Campanal Alliance of Lindley; Nat. Ord. Asteraceæ; Linn. Cl. 19, *Ord.* 1.

LACTUCA SATIVA.

CULTIVATED LETTUCE.

183

Under this head is generally understood to be included all the cultivated lettuces, but they are also by some botanists described under various specific names, as *L. sativa, L. palmata, L. crispa,* &c. Some of the varieties have been cultivated, both in this country and on the Continent, for feeding pigs. The chief advantages to be derived from the growth of lettuce are its arriving early at maturity, thereby affording a considerable bulk of food (if grown on fallow land), which may be removed, when sown early in the season, in time to admit of the soil being further wrought, if necessary, before the usual period for sowing winter wheat. Another advantage is, that it serves rather to enrich than to exhaust the soil. When a regular and large supply of lettuce is required, from about midsummer till the end of autumn, it must be sown at intervals of three weeks or a month, from the end of March to the end of June. The usual practice in field culture is to sow the seeds in drills about fourteen inches apart, and to thin the young plants out with the hand to the distance of eight or ten inches in the rows; they may also be sown in beds and transplanted by dibbling, which latter practice is generally preferred when grown on a small scale, as by cottagers who keep only one or two pigs. The most esteemed varieties for that purpose are the White and Green Cos and Large Cabbage Lettuces. The soil should be rather rich, and well pulverised before sowing.

* From *lac*, milk, in allusion to the milky juice which exudes from the plants when broken.

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V. ACHILLEA*. (*Neck.*)

Belonging to Class Exogens or Dicotyledons; Campanal Alliance of Lindley; Nat. Ord. Asteraceæ; Linn. Cl. 19, *Ord.* 2.

ACHILLEA MILLEFOLIUM.

COMMON MILFOIL OR YARROW.

184 Leaves slightly hairy, their segments linear, toothed, acute; flower-stalks furrowed; root stems, which creep on the ground, striking root in the soil during damp weather; flowers generally white, but occasionally pink and sometimes even deep red; perennial; grows naturally in dry pastures on light soils. The Yarrow is reckoned a grateful food for sheep, when mixed with the common pasture grasses, and is, therefore, generally sown along with such other seeds as are reckoned best adapted for permanent sheep pasture, on such soils as it is found naturally to thrive.

* Named after Achilles, a pupil of Chiron, and the first who used this plant in medicine.

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VI. POTERIUM*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Rosal Alliance of Lindley; Nat. Ord. Sanguisorbaceæ; Linn. Cl. 21, *Ord.* 9.

POTERIUM SANGUISORBA.

COMMON BURNET.

185

Leaves compound; leaflets serrated or toothed; stems somewhat angular, branching; perennial; height two or three feet; grows naturally on chalky pastures in England. The Burnet was formerly sown either along with, or as a substitute for, clover amongst grass seeds for hay or pasture, to a very great extent in some of the chalky districts of England; but its cultivation is now rather on the decline, although still grown to a considerable extent. It was never grown much in Scotland, nor does it seem deserving of more general encouragement, except, perhaps, in small quantities, as a mixture, on light sandy or calcareous soils.

* From *poterion*, a cup; *P. sanguisorba* is used in cooling drinks.

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VII. SYMPHYTUM*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Echial Alliance of Lindley; Nat. Ord. Boraginaceæ; Linn. Cl. 5, Ord. 1.

SYMPHYTUM ASPERRIMUM.

ROUGH OR PRICKLY COMFREY.

186 Leaves very rough stalked, heart-shaped, broad and tapering to a point, of a bluish-green colour; stem thickly set with reversed prickles; colour of the flower red or blue (changeable); height six to ten feet; perennial; roots branching, thick, and fleshy. Native of Siberia. Introduced in 1799. As an agricultural plant, the Prickly Comfrey, according to Loudon, was first brought into notice by Mr. D. Grant, a nurseryman at Lewisham, and tried by a number of cultivators. The plant is easy of propagation by seeds or roots; it is also of great durability, and if once established continues to produce crops for many years at the rate of thirty tons of green fodder per acre, and in that point of view is a valuable plant for the cottager who keeps a cow. Cattle become fond of this plant, when not permitted to grow until the leaves and stalks get too hard, although they may refuse it at first. The best mode of propagating it seems to be by dividing the roots, and planting them in a good deep soil, in rows two feet apart and at least fifteen inches between the plants. Seeds seldom ripen in quantity, and seedling plants are long in arriving at maturity.

Others of the genus Symphytum might be equally relished by cattle, but few or none of them can be compared with the above for bulk of produce.

* From *symphyo*, to make unite, and *phyton*, a plant; in allusion to its healing qualities.

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VIII. HEMEROCALLIS*. (*Linn.*)

Belonging to Class Endogens or Monocotyledons; Lilial Alliance of Lindley; Nat. Ord. Liliaceæ; Linn. Cl. 6, *Ord.* 1.

HEMEROCALLIS FULVA.

COPPER-COLOURED DAY-LILY.

187 Leaves light green, keeled, long, and pointed; apparent petals copper-coloured; root fibrous, perennial; height three to four feet. Native of the Levant; introduced into Britain about the year 1596. This plant was first brought under the notice of agriculturists by the late Mr. J. Ellis, an eminent English gardener. Cattle are extremely fond of the foliage, which is produced in abundance at a very early period of the season; the principal hindrance to its extensive cultivation is its backwardness in producing seed; from which circumstance it can only be propagated by dividing and transplanting the roots.

188 Another species, *H. flava*, Yellow Day-Lily, has also been recommended: it is considerably inferior to the other in produce, but of a more creeping habit of growth, and may, therefore, be propagated with greater facility.

* From *hemera*, a day, and *kallos*, beauty; in allusion to the beauty and duration of the flowers.

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IX. PETROSELINUM*. (*Hoffman.*)

Belonging to Class Exogens or Dicotyledons; Umbellal Alliance of Lindley; Nat. Ord. Apiaceæ; Linn. Cl. 5, Ord. 2.

PETROSELINUM SATIVUM.

COMMON PARSLEY.

189 Root leaves compound, terminal leaflets largest, and together with the rest plain, irregularly toothed, serrated, or curled (changing in different varieties); stem-leaves generally linear, with minute sheaths; stems much branched, height three to four feet; colour of the flowers light yellow; root fusiform, biennial. Native of Sardinia, from whence it is said to have been first introduced into Britain in the year 1548. Parsley is eaten by most of our herbivorous domestic animals, particularly sheep; and from being believed to act as a preventive of the rot in that animal, it has been recommended for sowing in their pastures. Although its biennial duration does not suit well for this purpose, it may enter into such mixtures in small quantities, when the soil is of a light and medium description; and if the pasture is not kept very bare, it will be found to ripen, and scatter a sufficient quantity of seed to perpetuate its existence. Of the numerous varieties cultivated, that generally employed for the above purpose is the Common Plain-leaved.

* From *petros*, a rock, and *selinon*, parsley; the habitation of the species.

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X. HERACLEUM*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Umbellal Alliance of Lindley; Nat. Ord. Apiaceæ; Linn. Cl. 5, Ord. 2.

The gigantic growth of several species of *Heracleum*, and the early period of spring at which they develop their umbrageous foliage, have led to trials for the purpose of ascertaining how far they might be beneficially used as cattle food; and, notwithstanding many highly favourable reports of the results which have from time to time appeared in the newspapers and other periodicals, their true merits are by no means ascertained. Like many others of the same natural order most of the species possess a peculiar aromatic taste, which is relished by some animals, while others cannot be induced by almost any means short of starvation to partake of them. The following are the two species principally deserving of notice:—

1° HERACLEUM ASPERUM. (*Bieberstein.*)

ROUGH SEEDED OR SIBERIAN COW PARSNIP.

Stem usually about six feet high, with numerous branches, terminated by large white-flowered umbels; root-leaves three to four feet long, deeply lobed, serrated, somewhat heart-shaped, and downy underneath; seed subrotund, and rough or scabrous; perennial. Native of the North of Asia, &c. This species, which yields an extraordinary bulk of root-leaves, of which cows are remarkably fond, was first brought into notice by Mr. J. Smith, Ayr, who exhibited it at the Highland and Agricultural Society's Show there in 1835. 190

* From *heracles*, a plant sacred to Hercules.

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2° HERACLEUM PANACES. (*Linn.*)

GIANT OR WOOLLY JOINTED COW PARSNIP.

191 Stem usually six to ten feet high, with fewer branches, and duller coloured flowers than the last, and very shaggy or hairy joints; leaves three to five feet long, palmated, downy underneath and rough on the veins; seeds smoothish; perennial. Native of the north of Asia and America.

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XI. PLANTAGO*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Cortusal Alliance of Lindley; Nat. Ord. Plantaginaceæ; Linn. Cl. 4, *Ord.* 1.

PLANTAGO LANCEOLATA.

RIB-GRASS.

192

Leaves lanceolate, tapering towards both ends, spreading, prostrated or lying on the ground; spikes or heads dark-coloured, short, and ovate; stems without leaves, angular, and rising to the height of twelve or eighteen inches; perennial. Grows naturally on dry pastures. The Rib-grass produces its foliage at an early period of the season, when it is eaten by cattle, sheep, and horses, on which account its mixture with grasses on dry pastures has been much recommended and practised; it seems, however, getting deservedly into less repute, from its close spreading leaves occupying too great a surface, to the partial exclusion of the more profitable grasses, clovers, &c., and also from live-stock, in general, seeming to manifest rather a dislike to its stalks and leaves, as the season becomes more advanced.

* From *planta*, the sole of the foot; from the resemblance to it in the leaves.

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XII. SPERGULA*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Silenal Alliance of Lindley; Nat. Ord. Illebraceæ; Linn. Cl. 10, *Ord.* 4.

SPERGULA ARVENSIS.

COMMON SPURRY OR YARR.

193 Leaves subulate, in whorls; flowers white; foot-stalks becoming reflexed towards the period of seed ripening; seeds somewhat kidney-shaped, angular, rough, and of a black colour; annual; height six inches to a foot. Grows naturally in corn fields, on very light dry soils. Spurry is much grown in Germany, as winter pasture for sheep and cattle, being sown on the stubble after the corn crops are removed. The flesh of sheep, as also the milk and butter of cows, fed on it, are said to be of very superior quality.

194 There is also a very distinct variety, termed *S. arvensis ramosus*, (Branching Spurry,) cultivated in the same country, which is rather earlier than the common sort, and in comparative bulk of produce may be reckoned as three to two. It does not appear, however, that either of these deserve much attention from the British agriculturist; and in inferior light soils there is generally a sufficient qaantity of the common sort naturally, if the tilth is fine.

* From *spargo*, to scatter; because it expels its seeds.

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XIII. SPIRÆA*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Rosal Alliance of Lindley; Nat. Ord. Rosaceæ; Linn. Cl. 12, *Ord.* 2.

SPIRÆA ULMARIA.

COMMON MEADOW-SWEET, OR QUEEN OF THE MEADOW.

195

Leaves compound, roughish, downy beneath, terminal leaflet largest, and divided into three lobes, side ones undivided; flowers white, leaves mostly produced from the root; height two to three feet; perennial. Grows naturally in damp situations, by the sides of ditches, rivers, &c., and may be always considered as indicative of a superior damp soil.

The culture of this plant has been recommended by several agricultural writers, (chiefly French), but it is very apt to be injured by mildew, and cattle do not seem particularly fond of it; and, at any rate, such soils as it will thrive on may be occupied by several other plants with much greater profit to the cultivator.

* From *speiraō*, to become spiral; in allusion to the flexile branches being suitable for twisting into garlands.

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XIV. CUCURBITA*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Cucurbital Alliance of Lindley; Nat. Ord. Cucurbitaceæ; Linn. Cl. 21, *Ord.* 10.

CUCURBITA PEPO.

PUMPKIN.

196 Leaves rough, cordate, indistinctly five-lobed; flowers large, yellow, and campanulate or bell-shaped; fruit roundish or oblong, smooth; stems trailing or spreading on the ground, to the length of ten to twenty feet, and, under favourable circumstances, they have been known to extend as far as forty or fifty feet from the root; annual. Supposed to have been first introduced from the Levant in 1570.

The Pumpkin, as well as several others of the genus, is cultivated in some parts of America, and other warm countries, as food for cattle and pigs; they will eat the young leaves and fruit, but not with much apparent relish at first. The fruit, to be in a state for using, should not be much more than half grown, when the average weight of each may be computed at from 10lb. to 20lb. But although the plants will grow and ripen fruit under favourable circumstances in this country, they are scarcely considered worthy of the cattle-feeder's attention.

A very curious and interesting set of specimens illustrative of different species of the genus *Cucurbita* will be found in the Collection.

* From *curvitas*, crookedness; in allusion to its shape.

END OF SECOND DIVISION.

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DIVISION III.

PLANTS CULTIVÁTED CHIEFLY FOR THEIR ROOTS.

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SECT. I.—PLANTS WITH THICK FLESHY FUSIFORM ROOTS.

I. BRASSICA* RAPA. (*Tourn.*)

BRASSICA RAPA.

Turnip.

Belonging to Class Exogens, or Dicotyledons; Cistal Alliance of Lindley; Natural Order Brassicaceæ, Linn. Cl. 15, *Ord.* 2.

English—TURNIP.
French—NAVET.
German—RUBE.
Spanish—NABO.
Dutch—RAAP.
Italian—NAVONE.
Latin—RAPA, NAPUS.
Greek—BUNIADAS. GONGYLIDAS.

Importance of the turnip.

TO the successful cultivation of this most valuable plant may be ascribed, in a great measure, the advanced state of agriculture in this country. Independently of its use in the garden, as affording nourishment to man, it has been the means of raising our stock farms to their present excellence, and of bringing into active cultivation many of our lighter and poorer soils, formerly considered as almost unproductive and worthless; and of exercising a highly beneficial influence in improving our whole system of husbandry, by its introduction in the rotation of crops.

Its antiquity.

The cultivation of the turnip has been practised from the most remote period. It was well known to the Greeks and Romans; and, although we are unable to trace, with certainty, its native country, still, from all we can learn on the sub-

* From the Celtic *bresic*, signifying a cabbage.

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Early cultivation of the turnip.

ject, we are led to believe that it came originally from Gaul, and other northern provinces of the empire. Throughout the middle ages, it appears to have been kept in cultivation by the Flemings, who were considerably advanced in agriculture in the fifteenth century.

In modern times the turnip seems to have been re-introduced to this country from Flanders about two hundred years ago. They were grown at first in the neighbourhood of London, in gardens, for culinary purposes, but were soon extended to the field; and Norfolk appears to be the first country where they were extensively cultivated for cattle.*

Tull, by his introduction of drill husbandry, gave a further impetus to the culture of the turnip; and we find it accordingly increasing, till, in 1764, we hear of upwards of 100 acres being grown on one farm alone, in Roxburgh, by Mr. Dawson of Graden. The rapid progress it has since made, is well known to all engaged in agricultural pursuits.

B. CAMPESTRIS RUTABAGA.

Swedish turnip.

1° BRASSICA CAMPESTRIS RUTABAGA.

Rutabaga, or Swedish Turnip.

The Swedish Turnip is a variety of the *Brassica campestris*, or smooth leaved Summer Rape (*Brassica campestris oleifera* of botanists), and the only difference which exists between them is, that the Swedish Turnip has large fleshy swollen globular or sub-rotund roots, while those of the Rape are small, fusiform, and hard.

The Rape is valued for its foliage, the Swedish Turnip for its roots; but both are of the same species, and there is a constant tendency in both varieties to develop the characteristics of their origin, according to the soil, situation, and many other circumstances in which they may be placed. Care and attention may

* Norfolk being the country into which the culture of Field Turnips was first introduced, the original, and consequently unimproved sorts, when grown in other places, were known by the name of Norfolk Turnips. This name is still retained and applied to a class of turnips which, so far as regards symmetry of shape, are to be considered inferior, and, apparently, only slightly improved from the first cultivated varieties. The name has no reference to the sorts at present cultivated in Norfolk, which are at least equal to those in any other district of Britain.

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B. CAMPESTRIS RUTABAGA.

Swedish turnip.

do much in preserving varieties, but they are essentially evanescent, for which reason they are hardly acknowledged by scientific men.

The importance of securing the preservation of the more clearly defined varieties, is well known to the farmer; still, it is beyond his power to perpetuate entirely for any length of time the characteristics of any one sort, and hence the numerous varieties which are constantly arising.

The Swedish Turnip is hardier than any of the common sorts (varieties of *B. rapa*), and in addition to its being esteemed as food for horses throughout the turnip season, is better adapted for spring feeding generally. It, however, requires a somewhat stronger and superior class of soils, together with a greater allowance of manure, but may, upon the whole, be considered equally, if not more, deserving of attention than the others; notwithstanding which, its cultivation has hitherto been comparatively little attended to in some districts of Scotland. Swedish Turnips are generally sown from about the middle to the end of May. They possess an advantage over the others in being easily transplanted, so that blanks in the rows, either of the Swedes or others (when they occur), are by that means easily filled up.

The produce of turnip crops is very variable. We have heard of upwards of sixty tons per imperial acre, down to a fifth of that amount; but, twenty to thirty tons, may be taken as the average.

In the following arrangement the plants are classified according to the colour of the top of the bulb.

RED OR PURPLE-TOP.

Red or Purple-Top.

1. Common Red or Purple-Top Yellow, or Lothian.—Upper part of the root of a dull reddish colour; under yellowish. This is held in great esteem by the generality of cultivators. Of it there are several sub-varieties, which have been obtained by a repeated judicious selection of the roots from which the seed-stock has been saved,—of these the two following may be mentioned:— 1

2. Ballantyne's New Improved Purple-Top.—So named from being origin- 2

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SWEDES.

Red, or Purple-Top.

ally brought into notice by Mr. Ballantyne, nurseryman and seedsman, Dalkeith. This is an improved stock of the last, and is more remarkable for its smallness of neck, uniform deep purple colour, and symmetry of shape, than for the size of its bulb.

3 **3. Skirving's Purple-Top.**—Specimens of this variety have been exhibited by its originator, Mr. William Skirving, seedsman and nurseryman, Liverpool, at various agricultural shows. They were of unusual dimensions, and seemed to possess, in a high degree, the properties of solidity and firmness of texture, so peculiar to the Swedes when grown to a large size; but shewed no other characteristic sufficient to distinguish them from the Common Purple-Top, than what might have been attributed to careful selection of the stock.

4 **4. Skirving's Improved Purple-Top.**—This is a more recent introduction, and possesses the characteristics of size and solidity of texture to fully a greater extent than the last; compared with which, it is also less flattened at the crown, and grows more above ground. For some years past this variety has been a good deal cultivated both in England and Scotland; but several eminent growers in the Lothians, as well as other districts, where the culture of Swedes is extensively practised, have found that it does not resist injury from frost so well as the Common Purple-Top. It has also been found more apt to run to seed.

5 **5. Matson's Purple-Top.**—This variety presents hardly any characteristics differing from the Common Purple-Top. It may, however, be considered an excellent stock, having good round firm bulbs of a true purple colour, with little or no tapering at the neck, which is frequently to be observed in the other varieties, more particularly Skirving's.

Purplish Green-Top.

PURPLISH GREEN-TOP.

6 **6. Fettercairn Globe.**—Seeds of this were received, in 1841, from Sir John Stuart Forbes, Bart. of Pitsligo and Fettercairn, who finds it superior to any other sort which he has grown, inasmuch as it yields a more regular crop, while its roots are fully above an average size, and possess a beautiful symmetrical glo-

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SWEDES.

Purplish Green-Top.

bular form, without neck, and are a shade lighter in colour than the Common Purple-Top.

7

7. Laing's Improved Purple-Top.—This differs from all other hitherto known varieties of Swedish Turnip, in having large entire cabbage-like leaves, which, by their horizontal growth, form a thick covering to the soil, thereby materially checking the vigour of autumnal weeds. It bears the name of its originator, Mr. Alexander Laing of Duddo, near Berwick-on-Tweed, who first offered its seed to the public in 1829; and numerous parties who have since grown it, bear testimony to its superiority in attaining to a large size, being of a fine globular shape, extremely hardy, and about a fortnight later in running to seed in spring than any of the other sorts.

8

8. Thorpland Globe.—In symmetry of form this variety is inferior to none of the others, being of a beautiful globe shape, without the least appearance of neck, so frequent in turnips of this class; it is, however, smaller in size than the more commonly cultivated sorts, and, consequently, would seem best suited for garden culture. Unfortunately, its characteristics of colour are by no means permanent, inasmuch as seeds saved with the greatest care from selected roots, vary in their produce to all shades of colour from a deep purple to a light green, which causes an appearance of mixture in the crop, generally disliked by growers.

9

9. Victoria New Pink-Top.—In general character and appearance, this has nothing to recommend or distinguish it from a good stock of the common purple Swede, except that it is lighter coloured on the upper surface, which gives it the appearance of being a cross between the purple and green-top varieties. It was first raised by Messrs. Mackie and Ewing, seedsmen, Norwich, (from whom seeds were received in 1839), where it is held in considerable repute; but although its merits were even more decided, yet its indistinctness of colour will tend much to prevent its becoming a favourite with Scottish growers, many of whom are too apt to think any variety approaching to the green as being just so far degenerated from the generally esteemed Purple-Top Swede.

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SWEDES.

Purplish Green-Top.

10. Cox's New Imperial.—This variety may be considered intermediate in colour between the Purple- and Green-Top; its roots often acquire a large size, but are rather irregular, and of a somewhat coarse quality.

11 Green-Top.

GREEN-TOP.

12 **11. Common Green-Top.**—Upper part of root dull green; under yellow. This variety is of longer standing than the Purple-Top, since the introduction of which, less attention has been bestowed by cultivators (in Scotland at least), towards procuring improved stocks of the Green-Top Swede, which has on that account fallen somewhat in the estimation of growers; but when the same care is taken in selecting the roots grown for seed, the Green-Top may be considered as being equal in merit to the Purple.

13 **12. White.**—Roots irregularly shaped, being often divided or branched; white under the surface of the ground, and greenish above. The White Swede may be considered as the most inferior and unimproved variety; it is at present scarcely in cultivation, and when it appears amongst others, is considered as the effects of degeneracy, or as arising from a bad stock of seed.

14 **13. Rivers's Stubble.**—This variety owes its origin to Mr. Rivers, the well-known nurseryman, at Sawbridgeworth, Herts. Mr. Rivers, in describing it, says,—"The variety owes its origin to a cross between a large variety of the Early Stone Turnip and the Old Green-Top Swede; it has become a distinct kind, by carefully selecting for seven years, those that were most like the Swede in habit, so that now it is a true Swede, with the earliness of the White Stone Turnip. It is green-topped with yellow flesh, short necked, and is as hardy as the Old Purple- or Green-Top Swede; and, if even sown for a full crop, will yield a heavier weight per acre than either, besides yielding an equal weight per acre to Skirving's Swede, while for the last three successive years it has nearly doubled all other kinds of Swede, when sown in July."

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2° BRASSICA OLERACEA RAPA, or BRASSICA NAPO-BRASSICA.

B. OLERACEA RAPA.

Turnip-Rooted Cabbage.

TURNIP-ROOTED CABBAGE.

Turnip-Rooted Cabbage. 14

Continental writers seem generally to agree in recommending the cultivation of the Turnip-Rooted Cabbage, from its roots, in addition to its being naturally hardy, growing under, or almost under, the surface of the ground, whereby it is enabled to resist the severest winters; but it does not seem to deserve the attention of British agriculturists, as the Swedish Turnip, which is evidently much superior, is sufficiently hardy to withstand the generality of the most rigorous winters to which this country is subjected. As on those parts of the continent where the other is generally cultivated, the Swedish Turnip has not yet, or is only recently fairly introduced, it is very probable that, when the superior merits of the latter become more fully known and appreciated, the culture of the Turnip-Rooted Cabbage may be entirely superseded. Several varieties of Turnip-Rooted Cabbage, which were grown in our Experimental Grounds, from seeds procured from various parts of the Continent, differed little from the white, or what is generally termed very bad Swedish Turnip, except in the leaves, which very much resembled those of some common varieties of kale.

3° BRASSICA RAPA.

B. RAPA.

Common turnip.

COMMON TURNIP.

The common turnip bears the same relation to the rough-leaved summer Rape (*Brassica Rapa oleifera*), that the Swedish turnip does to the smooth-leaved summer Rape (*Brassica campestris oleifera*).

The varieties of the common turnip are a great deal more numerous than those of the Swedish, compared with which they are also, in general, of much finer symmetry, as well as of a larger size, differences which may be partly accounted for from the common turnip having been longer in, and received a more extended, cultivation. One peculiarity, however, inherent to the Swedes, is, that the

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B. RAPA. Common turnip.

larger the size to which they grow, a given weight of roots is found to contain a greater portion of nutritious matter, while the common turnips, on the contrary, after attaining to a certain size, lose a proportionate quantity of that most valuable part of their composition (see *Hortus Gramineus Woburnensis*); which circumstance tends to shew the necessity for, and the advantages to be derived from, devoting more attention to the procuring of large and well-formed varieties of Swedes, and also to the procuring of hybridal varieties between the Swedes and Common Turnip, which may be found to combine the size and symmetry of the best varieties of the latter, with the valuable properties peculiar to the former.

The Common Turnips may be divided into the Round or Globe shaped (*depressa*), and those approaching the Tankard form (*oblonga*).

COMMON ROUND OR GLOBE.

PURPLE-TOP YELLOW.

Purple-Top Yellow Globe

15 **14. Common or Old Red Purple-Top Yellow, or Purple-Top Aberdeen.**—Leaves comparatively short, spreading, of a dark colour, and collected into a small neck at their base; root globular or somewhat flattened, of a reddish purple colour above, and deep yellow under the surface of the ground, of medium size; tap-root very small. This is an old and very deservedly esteemed variety, and in comparison with those commonly cultivated, is considered by some to come nearest the Swedes in hardiness and solidity of texture.

16 **15. Berwickshire Border Imperial Purple-Top Yellow.**—This, which may be considered as a superior or improved variety of the last, was first introduced by Mr. R. Hogg, nurseryman and seedsman, Dunse, Berwickshire; its principal distinguishing characters are, roots somewhat large, flesh and under part of the skin deep yellow, and top of a bright red or purple colour, firmer in texture and hardier than the last.

17 **16. Skirving's Improved Purple-Top Yellow.**—This is also an improved variety of the old Purple-Top Yellow Bullock, and grown to a considerable extent in some of the north-west districts of England. It acquires its name from having

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GLOBE.

Purple-Top Yellow.

Green-Top Yellow.

been first brought into notice by Mr. William Skirving, nurseryman and seedsman, Liverpool.

GREEN-TOP YELLOW.

17. Yellow Aberdeen Bullock, or Green-Top Yellow Bullock.—In the size and shape of its roots this old and deservedly esteemed sort resembles the Purple-Top Yellow Bullock, but differs in the colour of its top, which is bright green. 18

18. Old Scottish Yellow.—In size and quality is about equal to the last variety, but its roots are considerably more flattened, and grow deeper, or seem more buried in the ground, and have, from that circumstance, a smaller proportion of green-coloured top, which is also of a lighter shade. This variety is not now in general cultivation. 19

19. Hood's Imperial Large Yellow.—Is a very superior large globular-shaped hardy turnip, remarkably perfect in symmetry, with rather a lightish green top. Introduced by Mr. Charles Hood, an eminent farmer, at Inverbrora, Sutherlandshire, who has devoted much attention to the cultivation and improvement of field turnips generally. 20

20. Pollexfen's Green-Top Yellow Bullock.—This name is applied to a selected and improved stock of the Aberdeen Yellow Bullock, which has been grown for some years by Mr. Thomas Pollexfen, Kirkwall, Orkney, and which is considered fully larger in size, rather hardier, and more symmetrically formed than the ordinary stocks of the variety from which it derived its origin. 21

21. Gordon's Yellow.—This is a name under which a very superior variety is known in some of the north-eastern districts of Scotland, and which was originally introduced by Mr. Gordon, an eminent cultivator, at Auchleucries in Aberdeenshire. It is of a rather oblong shape, deep green colour on the top, generally very slightly tinged with red, and appears about equal in merit to the last. 22

22. Yellow Stone.—This variety differs from the last in growing more out of the ground, and having a greener top; in other respects it is similar. As a garden turnip, this is one of the most esteemed sorts. 23

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Globe. Green-Top Yellow.

24

25

23. Yellow Scaresbrooke.—This variety differs little from the Altringham, except in the green tinge on the top, and being of a paler yellow below; it is, consequently, not so much esteemed.

24. Yellow Dutch.—Roots small and globular, of a pale yellow colour throughout, or very slightly tinged with green on the top, particularly when much exposed to the sun and weather. This is a much esteemed early sort, being of excellent flavour, and very well adapted for using in summer and autumn.

Yellow.

YELLOW.

26

25. Altringham Yellow.—Compared with the generality of yellow field turnips, this is rather under the medium size; the root, however, is of a fine globular shape; and possessed of considerable solidity, with a light greenish top, very small neck, and tap-root.

27

26. Jones's Yellow.—This variety originated in the neighbourhood of Stirling, where it is still cultivated to some extent; it bears a considerable resemblance to the Altringham Yellow, but grows to a larger size, and the yellow colour, both of the skin and flesh, is deeper.

28

27. Yellow Preston, or Liverpool Preston.—This is also an early sort, and bears a considerable resemblance to the last, but grows to a larger size, has stronger foliage, and is less hollowed towards the tap-root.

29

28. Yellow Globe.—Roots of medium size; globular, and always nearly under the surface of the ground; top greenish, leaves rather small and spreading. This is a superior turnip, both for field and garden culture.

30

29. Robertson's Golden Stone.—This new and excellent variety has only recently come into general field culture. It has a fine globular shape, and is of a deep orange yellow throughout, and has little or no green tinge on the top. It is not a good keeping turnip, but, at the present, it is the best known variety for late sowing.

31

30. Yellow Malta, or Maltese Golden.—Roots very small, slightly flattened above, and concave, or much hollowed, on the under side towards the

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GLOBE. Yellow.

tap-root, which, as well as the neck, is remarkably small; skin very smooth, and of a bright orange-yellow colour; leaves also very small. For summer and autumn crops, this is the most esteemed of all the Yellows, but is rather tender, and incapable of withstanding frost.

31. Finland.—This is a beautiful little turnip of a bright yellow throughout, even to the neck, somewhat similar to a small firm Malta Yellow, but differing in the fine colour, and having the under part of the bulb singularly depressed, from which issues a small mouse-tail-like root. It is also somewhat earlier than the Yellow Malta. 32

WHITE. White.

32. White Globe.—Root globular; skin smooth and perfectly white; neck and tap-root small. Although the above description embraces the principal characters of the White Globe turnip, yet there is a considerable variety in those to which this is applied, arising from the degree of care and attention bestowed by growers in selecting their seed roots; and the shape is often not a little affected by the kind and state of the soil in which they are grown. Thus, Globes of any kind, and particularly the variety here mentioned, when grown on a very superior rich soil, may be said to be forced beyond their natural size, and thereby acquire somewhat of a monstrous or overgrown appearance, losing, in a great measure, their natural symmetry of shape. 33

33. Pomeranian.—This variety was introduced some years since from Pomerania, and may be considered as the most perfect Globe turnip in shape, as well as the most regular or uniform grower. Its skin is of a smooth white and somewhat shining or transparent-like appearance; leaves smoothish, of a dark green colour, with whitish nerves. A rather smaller variety, but in other respects resembling the Pomeranian, is known in some places under the name of Crystal Globe. 34

34. Snowball White Globe.—This name is applied to a sub-variety of white globe, perhaps the most perfect in regard to form or symmetry of any 35

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Globe. White.

sort hitherto cultivated, being of a true globular shape, with a remarkably small root and top. It is of English origin; and the produce of seed received from Messrs. Charlwood, Covent Garden, in 1839, was found to be deficient in weight, as well as more easily injured by frost, than either the Common or Pomeranian White Globes; so that it may be more properly regarded as a garden than a field turnip.

36 **35. White Norfolk, or White Round.**—This is the largest rooted variety of Norfolk, and at the same time softest and most irregular in shape. It is generally hollowed towards the neck, and, being so, it is apt to be injured by retaining moisture, which renders it unfit for using, except in the beginning of the winter season.

37 **36. White Dutch.**—This is the most esteemed sort for early crops. It is juicy, and of excellent quality when young, but soft, spongy, and inferior when full grown, at which period it becomes of an irregular round and much flattened shape. Its culture in the field has been recommended when late sowing is necessary; but, in such a case, the Autumn, or Six Weeks, and the Tankards, are decidedly preferable.

38 **37. White Garden, or Early Stone.**—This is a common and well-known garden turnip, of a rounder shape, firmer texture, and stronger foliage, than the White Dutch; it is not, however, so well adapted for early spring sowing, being more apt to run to seed, and has acquired the name of Early from the circumstance of its arriving soon at maturity when sown at a later period of the season. A carefully selected and improved variety of this is known in some parts of England by the name of Mousetail Turnip.

39 **38. Stone Globe.**—This is considered as being the hardiest of all the White Globe Turnips. It grows naturally deeper in the soil than the others, and has stronger darker green foliage.

40 **39. Autumn Stubble, or Six-Weeks.**—Roots much above ground; rather large, of an irregular globular shape, or in form somewhat between the White Globe and White Norfolk, and rather soft. This sort arrives sooner at

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GLOBE. WHITE.

maturity than any of the others, the Tankard turnips excepted; and, from its natural softness of texture, should always be sown late, and used before the severe frosts set in. As descriptive of its earliness, it has received the above names, being suited for sowing in early situations in autumn, after the corn crops have been removed, and is also valuable for making up blanks in turnip fields, where the first sowing may have partially failed.

WHITE WITH RED-TOP.

WHITE WITH RED-TOP. 41

40. Red Globe.—Roots medium sized, globular-shaped, and firm in texture. This is an old, and, in some districts, pretty extensively cultivated variety. It is medium early, and generally allowed to be particularly well suited for light soils, and exposed elevated situations.

42

41. Red Norfolk.—In size, this sort is inferior to the last, but rather firmer in texture, and more regular in shape. It should also be used in the early part of the season, and is at once distinguished from all the other round flattened varieties by its bright reddish top, and from the Red Globe by its flat shape.

43

42. Red Dutch, or Early Garden Red.—The roots of this are very similar in shape to those of the last variety, but differ in colour, being bright red above ground, and also in having smaller and darker coloured foliage. This is a very excellent variety, but little known in this country.

44

47. Hungarian Red-Top White.—A very distinct variety, having entire and erect growing leaves; its roots are of a roundish or somewhat flattened shape, attain to a medium size, and arrive early at maturity. In a collection of turnips, the seeds of which were received from France, in 1837, and grown in the Experimental Grounds of his Grace the Duke of Buccleuch, at Dalkeith Park, this appeared the most promising; but it has hitherto received almost no attention from British cultivators, although, with a little care in the selection aad rearing of its seed, it might be found a superior sort.

WHITE WITH GREEN-TOP.

WHITE WITH GREEN-TOP. 45

44. Green Globe, or Green-Top White Globe.—Roots of a fine globular

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Globe. White with Green-Top.

shape, with a small neck and tap-root; very white under, and green above the surface of the ground; of medium size, hardy, and firm in texture, but scarcely so much so as the Green Round, than which it arrives at maturity rather earlier. A very fine sub-variety of this is known, in some parts, under the name of Hungarian Green-Top Globe; it is larger and softer than the common sort; also of a fine regular shape, and was first introduced by Mr. Adam Ferguson, of Woodhill, who received its seeds from Hungary.

46 **45. Green Norfolk, Green Round, or Common Green-Top White.**—The Norfolk turnips are all of a peculiar flattish shape, rather hollowed towards their neck, as also on their under side, and when grown to a large size, they become more or less of an irregular round or somewhat angular shape. The Green-Top variety possesses these characters in a less degree than the White Norfolk; and is generally of a pretty regular round shape, flattened, but not much hollowed on the upper and under surface; the former of which is of a green colour, and the latter white.

47 **46. Lewisham Green-Top Ox-Heart.**—This is an excellent variety, grown in some of the southern districts of England and in Scotland. Acquired this name from having been first introduced by Messrs. Willmott & Co., seedsmen, Lewisham; in colour and shape it very much resembles the Lawton Hybrid, but is somewhat softer in texture, and has larger and lighter green-coloured leaves.

Black or Brown Round.

BLACK OR BROWN ROUND.

48 **47. Round Black.**—Leaves small, few, and smoothish; roots almost or altogether under ground, of an irregular roundish shape, often divided or terminating in thick branches at its lower extremity; skins very rough and of a black colour; flesh white. This and the next three sorts have a hottish, somewhat radish-like taste, for which they are esteemed and cultivated in some parts of the Continent.

49 **48. Round Brown.**—This differs very slightly from the last except in colour, which is dull brown or earthy-like.

50 **49. Small Berlin, or Teltau.**—This is remarkable as being the smallest

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of all the turnips. It is of an oblong or carrot shape, about three inches in length, and at the thickest part seldom above an inch in diameter; of a dull transparent-like white, or very light lead colour, and is possessed of a peculiar slightly hot taste.

GLOBE.

Black or Brown Round.

*THE COMMON TANKARD TURNIP.**

YELLOW WITH PURPLE-TOP.

Yellow with Purple-Top.

The tankards, like Norfolks, are unsuitable for winter feeding, not so much on account of their softness as from their standing mostly above ground, and being thereby much exposed to frost. They are also generally earlier in arriving at maturity than the others.

50. Purple-Top Yellow.—Root bright yellow, with a purple top, of a somewhat irregular long or tankard shape. This variety was formerly grown in some districts of England, but is now nearly out of cultivation; nor does it seem entitled to any particular share of attention, being altogether a coarse inferior sort, and not capable of yielding such bulky crops as either of the two following.

51

YELLOW GREEN-TOP.

Yellow Green-Top.

51. Large Laurencekirk Yellow. — So named from having been originally selected, and brought into the notice of cultivators by Mr. Robert Scott, Laurencekirk. At first sight this may be mistaken for Dale's Hybrid, like which, it grows a good deal out of the ground, but is distinguished by its more oblong and more uniformly shaped roots. It is a valuable acquisition, being also, like that variety, early in arriving at maturity, but generally considered rather less hardy, and, like it, also yields a bulky crop.

52

52. Long Cambridgeshire Yellow. — This variety, which is scarcely

53

* Tankard is a name applied to such common field turnips as are of an oblong shape, and the roots of which, in general, grow a good deal above the surface of the ground. Such oblong varieties, however, as approach nearest to a round or globular form, are sometimes termed Decanter, or Decanter-shaped turnips.

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B. RAPA.

Green-Top Yellow.

known in Scotland, is grown to a pretty considerable extent in Cambridgeshire and Suffolk, where it is also sometimes known by the name of Pudding Swede, which name it seems to have acquired more on account of its hardness of texture than from any other resemblance which it bears to any of the true Swedish turnips. Its roots are much longer in shape than those of any other yellow field turnip. Bulb of a lightish yellow colour, with green top, and, in general, grows more than half underground.

54

53. Large Long Garden Yellow.—Root, about one-fourth part above ground, of a greenish colour, while that below the surface is of a deep yellow. This is a hardy and rather superior sort, hitherto little known in this country, but grown pretty extensively on the Continent.

55

54. Small Long Yellow.—Leaves very small and spreading; root generally entirely underground, small, and of an oblong or carrot shape, terminating abruptly at the point; colour light yellow. At present this variety is little known in Britain. About a century ago, however, both it and the White were more in esteem. They are both of excellent flavour, and grown to a considerable extent in some parts of the Continent, particularly in France and Holland, from whence they used to be imported for the London market. Their underground habit of growth protects them, in a great measure, from frost, and they succeed best on sandy soils.

Yellow.

YELLOW.

56

55. Yellow Bortsfield.—This variety is not at present much known; it will, however, prove, we think, a valuable addition to our garden turnips. It presents a fine tankard shape, is of a pale yellow colour throughout, and has little or no green on the top. About the earliest of the tankards.

White.

WHITE.

57

56. White.—Roots of this variety longer, and, in general, larger, also softer in

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texture than those of the Green Tankard, often bent or crooked; leaves large and luxuriant; the earliest maturing of any, but will not stand the frost.

TANKARD. White throughout.

57. Small Long White.—This variety differs little, except in colour, from the Small Long Yellow. 58

58. Very Small Long, or Maltese Long White.—This differs from the preceding in being, generally, partly above ground, which part is of a greenish colour; also longer, and tapering more gradually towards the point. 59

WHITE RED-TOP.

White Red-Top.

59. Red.—In size, shape, and texture, this variety may be considered as occupying an intermediate place between the Green and White Tankard. It is of a bright red colour on the upper surface and white on the under. 60

WHITE GREEN-TOP.

White Green-Top.

60. Green.—Roots more than half above ground; oblong or tankard shaped; of a greenish colour, except on the under surface, which is white. 61

4° BRASSICA CAMPESTRIS RAPA HYBRIDA.

B. CAMPESTRIS RAPA HYBRIDA. Hybrid turnip.

HYBRID TURNIP.

61. Dale's Hybrid.—From the circumstance of this variety being a mule, or hybrid between the Green-Top Swede and White Globe, procured by repeated impregnation, it may be presumed that it might, with equal propriety, have been included amongst the varieties of *Brassica campestris rutabaga*, or Swedish turnip. It, however, bears a much greater affinity to those of *B. rapa*, inasmuch as its leaves are also rough, and of a vivid green (not glaucous) colour, and in its roots being somewhat similar in form and texture. It has received the name of Dale's Hybrid, from being first raised and brought into notice by Mr. Robert Dale, an intelligent farmer at Libberton West Mains, near Edinburgh, who having, in 1822 or 1823, received a few ounces of seed of a new hybridal variety of turnip from the late Mr. James Shirreff, of Bastleridge, Ber- 62

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Hybrid Turnip.

wickshire, he sowed the same, and the produce was found very much to resemble the Swedish in shape, and from which, by repeated selection and impregnation, he at length obtained this esteemed variety, the distinguishing characteristics of which are—foliage strong and luxuriant, roots of a large size, oblong shape, and of a lightish yellow colour, with light green top, having also a small neck and tap-root. The shape of the root, however, although generally oblong, is rather apt to vary, being sometimes almost globular, but its more material characteristics of large size and luxuriance of growth, are uniformly the same. Compared with any other of the common field sorts, it is found to arrive sooner at maturity, and consequently may be sown at a later period of the season; while, at the same time, it is equally hardy, or at least has been found sufficiently so to withstand the severest winters which have occurred since its introduction.

63 **62. New Purple-Top Hybrid.**—In its general appearance this variety seems nearer in relation to the Swede than Dale's Hybrid; like it, however, it has the rough vivid green root foliage by which the varieties of *B. rapa* are so easily distinguished. Judging from specimens of roots sent to us by Mr. Andrew Longmore, Rettie, and which were raised by him from seed grown by Mr. Grant Duff, of Eden, this seems likely to become a very useful turnip for using in the spring months. Most of these roots were of a slightly oblong shape, of a greenish-purple colour on the top, and light yellow, or almost white, on the under surface. They were all remarkably firm in texture, and rather late in beginning to shoot.

64 **63. Lawton Hybrid.**—This variety, which was raised by Mr. James Wright, of Lawton, Strathmore, may be considered as bearing the same relation to the Swede as Dale's Hybrid. Its leaves are darkish green, rather small and smoothish; roots roundish, or somewhat heart-shaped, being often tapered on the under side; white below, and green above the surface of the ground. They are possessed of more solidity and firmness of texture than most of the white sorts.

65 **64. Woolton Hybrid Red-Top White.**—Was discovered in a field of Purple-Top Swedish turnips, by Mr. Uppelby, of Woolton, Barrow, near Hull. A very

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valuable kind, as it is hardy, globe-shaped, grows to a large size, and keeps well till the end of February, or even later.

BLACK OR BROWN.

65. Long Black.—This differs from the Round Black very slightly, except in the form of its root, which is of a long carrot shape, and also mostly under ground. 66

66. Long Brown.—This variety bears the same relation to the Round Brown, as the last does to the Round Black. 67

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II. BETA.* *(Linn.)*

B. VULGARIS. Beet.

BETA VULGARIS. *(Tourn.)*

Belonging to Class Exogens, or Dicotyledons; Chenopodal Alliance of Lindley; Natural Order, Chenopodiaceæ; Linn. Cl. 5, Ord. 2.

Its native habitat.

THE beets in cultivation are natives of the south of Europe. Two kinds are mentioned by Pliny, the black and white, who states that the root was held in great esteem by the Greeks, and formed one of their votive offerings to Apollo in his temple at Delphos.

Introduction. Varieties.

The red beet was introduced to this country in 1548, and the white variety in 1570. The varieties of *Beta vulgaris* are classed as *B. vulgaris campestris*, Field Beet, and *B. vulgaris hortensis*, Garden Beet. In the former are included all those of greatest importance to the agriculturist, and in the latter, such as are chiefly confined to garden culture, and some of which are well known as valuable esculent vegetables.

Limited cultivation.

In this country, the varieties of *B. vulgaris campestris* have hitherto received a rather limited share of cultivation. One reason why they may not have hitherto received a greater share of attention is from an opinion being prevalent, that, however well Field Beets may succeed in England, the climate of Scotland is, to a certain degree, unsuited for their growth. Judging, however, from specimens of the growth of this country, in the Collection, there seems every reason to conclude that a more general knowledge of their merits, and, perhaps, the removal of a little prejudice on the part of cultivators, is only necessary to insure their more extended cultivation. Both roots and leaves are particularly valuable as food for live-stock, and for milch cows in particular, as they are found to impart a rich and agreeable flavour to their produce. In France, the cultivation of Mangold Wurt-

* From the Celtic *bett*, signifying red, in allusion to the colour of the roots. Another derivation is from the second letter of the Greek alphabet (*beta*) from the fancied resemblance to it of the seed vessel.

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zel has long been carried on to a great extent for the manufacture of sugar; and, both on the Continent and in Britain, it has been used in the distillery.

Besides the use of the garden sorts for pickles, &c., as is well known in this country, some of them are used in France as a substitute for coffee after having been cut into slices and sufficiently dried.

1° BETA VULGARIS CAMPESTRIS.

FIELD BEET, OR MANGOLD WURTZEL.

1. Common, or Marbled.—Leaves reddish or reddish green; roots thickly fusiform or spindle-shaped, of a dullish red colour on the outer surface, and marbled, or of a mixed white and reddish colour, of various shades, in the interior. This variety is the most esteemed, and generally cultivated for feeding cattle, from its being a free grower, and also from its producing a much greater weight of roots per acre than any other. The marbled, or mixed-like colour of its flesh, seems particularly liable to vary, being, in some specimens, of a nearly uniform red colour, while in others the red is scarcely, and often not at all, perceptible. These variations in colour are, however, of no importance in regard to the quality of the roots. 68

2. Red-Skinned, with White Flesh.—Leaves somewhat lighter in colour than those of the Common; roots also thicker in proportion to their length, or more approaching to what is generally termed a turnip shape; skin of a bright lightish red colour, and flesh very white. This variety is to be particularly distinguished by cultivators, from the whiter or almost white-fleshed specimens of the Common, and is easily recognised by its more globular and also smaller root. It is cultivated in some parts of Germany, but is at present scarcely known in Britain. 69

3. Turnip-Rooted.—Roots globular or heart-shaped, being generally slightly tapered towards the bottom, with reddish coloured skin and slightly marbled red and white, or entire white flesh. This variety, compared with the others, is of recent introduction, and, from the shape of its roots, admirably adapted for shal- 70

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B. VULGARIS CAMPESTRIS.

Mangold Wurtzel.

low soils, in addition to which it is also said to be particularly suited for such as are of a light sandy or siliceous nature.

71 **4. White.**—Leaves green, with very light green coloured ribs; skin and flesh of the thickly fusiform roots, white. This variety is, like the yellow, chiefly esteemed on the Continent (but more particularly in France) for the manufacture of sugar and for the distillery.

72 **5. Yellow, or Orange.**—Leaves green, with yellowish or orange coloured ribs; root pretty regularly and thickly fusiform, with a deep yellowish coloured skin, and light yellow, or almost whitish coloured, flesh. Compared with the Common, the roots of this variety are, in general, much smaller, but they are considered finer in texture, to contain more saccharine matter, and, therefore, more esteemed for feeding horses, as well as for the manufacture of sugar, and also in the distillery.

B. VULGARIS HORTENSIS.

Garden Beet.

3° BETA VULGARIS HORTENSIS.

GARDEN BEET.

73 **6. Common, or Large Red.**—Leaves reddish; roots generally entirely under ground, pretty long, of a regularly tapered or fusiform shape, and of a uniform red colour throughout.

74 **7. Small Deep Red.**—Leaves rather small and spreading, of a very deep red colour; roots growing more above ground, smaller, and more bluntly tapered than those of the Common; and, both in skin and flesh, of a much deeper blood-red colour. Known, also, as Superb Deep Blood-Red.

75 **8. New Blood-Red, or Mulberry.**—This seems a sub-variety of the Small Deep Red, from which it differs chiefly in being of a much darker or almost blackish mulberry colour.

76 **9. New Short-Rooted Deep Blood-Red.**—Like the Small, this sort also grows a good deal above ground, and differs from it chiefly in having much shorter or more turnip-shaped roots.

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77
78

10. Basanno.—Leaves reddish green, with red coloured ribs; roots globular or slightly depressed, with a smooth bright red coloured skin, and pure white flesh.

11. Neapolitan Turnip-Rooted.—This variety differs from the Basanno chiefly in having reddish or marbled-like flesh.

In addition to the varieties above particularized, there are several others of minor importance, among which may be mentioned Yellow Small Long, and Turnip-Rooted, White Turnip-Rooted, &c.

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III. DAUCUS* (*Tourn.*)

DAUCUS CAROTA.

DAUCUS CAROTA. Carrot.

Belonging to Class Exogens, or Dicotyledons; Umbellal Alliance of Lindley; Natural Order, Apiaceæ; Linn. Cl. 5, Ord. 2.

English—CARROT. | *French*—CAROTTE.

Its origin.

THE true *Daucus Carota* is a common poisonous plant of no importance, except as being the origin from which all the cultivated varieties of carrot are derived, and which, in appearance, differ from the original in little except having thick fleshy fusiform roots. As an agricultural plant, it is only advisable to cultivate the carrot on light, dry, rather rich soils, and on such as are a little peaty, which should be previously subjected to a very deep ploughing; and the purpose to which its roots may be most beneficially applied is the feeding of horses, although they may also be given as food to other kinds of live-stock, as milch cows, &c. Its roots, like those of Mangold Wurtzel, contain a large portion of saccharine matter, and have also been used in the manufacture of sugar, and in the distillery, but chiefly so in France, Germany, and some other parts of the Continent, where the field culture of the carrot has been hitherto much more extensively practised than in Britain.

Varieties.

The cultivated varieties of *Daucus Carota* are generally distinguished by the name *D. Carota hortensis*, or Garden Carrots; but they may be again divided into two classes,—the first comprising those varieties which, in addition to being cultivated for the table, are also suitable for field culture, and for feeding live-stock, and the second, those exclusively suited for garden culture.

Garden or Field varieties.

1° CARROTS SUITABLE EITHER FOR GARDEN OR FIELD CULTURE.

79

1. **Altringham.**—This sort is easily distinguished from the Orange and Long

* From *daio*, to make hot, in allusion to its medicinal properties.

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Field or garden varieties.

Red by its roots growing more above ground, also by their having more convex or rounded heads, tapering rather more irregularly, and terminating more abruptly at the point; in colour most resembling the Orange, but having a smaller heart. This variety is more difficult to procure genuine than any of the others, from its being remarkably liable to sport, even although the roots grown for seed be selected with the utmost care. It is an excellent sort for field culture as well as for the esculent vegetable market.

2. Large Red, Large Orange, Large Field or Cattle Carrot.—Roots entirely, or almost entirely, under ground, long, thick at the upper end, and regularly tapered to the point; of a somewhat orange or light reddish vermilion colour, with a rather large heart. This variety is well adapted for feeding cattle, but from being rather coarse is not so well suited for the table as the Altringham and Long Red. 80

3. Large White Green Top.—Roots thick in proportion to their length; of a large size; white under ground, but of a green colour on the top, which rises considerably above the surface of the soil. This variety, introduced from France, where it was first brought into notice by M. Vilmorin, is now pretty extensively cultivated. One great advantage which it possesses is, that, from the comparative shortness of its roots, and their above-ground habit of growth, it is well adapted for those districts, which have not depth of soil sufficient to grow the longer rooted varieties. 81

4. Long Red, or Long Surrey.—Roots, compared with those of the Orange, much longer in proportion to their thickness; of a deep red colour; and having a comparatively smaller heart. 82

5. Red, Deep Red, or Purple-Coloured.—Roots long and under an average size; of a deep reddish purple colour, with a large yellow heart. This variety is sometimes cultivated in France on wet or marshy soils, for which it is reckoned better fitted than any of the others. 83

6. White, or Common White.—Roots growing entirely under ground; smaller in size, and of a longer tapering shape than those of the Large White, 84

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Field or Garden varieties

and having also a proportionately thicker heart. This is, on the whole, an inferior sort, and not deserving of cultivation.

Garden varieties.

2° VARIETIES EXCLUSIVELY SUITED FOR GARDEN CULTURE.

85 **7. Early Horn, or Dutch.**—Roots less than in any of the former, with a very small heart; thick, short, and terminated abruptly; growing partly above the ground, and having a hollow crown, with very small neck and foliage. This is the earliest, and a very much esteemed garden carrot, of which there are several sub-varieties in cultivation in Germany and Holland, differing in nothing except in their colour, being of various shades between yellow and a deep red vermilion, which last is the colour of that most esteemed and exclusively cultivated in this country.

86 **8. Early Forcing.**—Root conical, of very diminutive size, seldom exceeding three inches in length.

87 **9. Short Red, or Short Orange.**—In size and shape of its roots, as well as in the period of its arriving at maturity, this variety may be considered intermediate between the last and the Orange; but although a superior sort, it is as yet less known than either amongst growers.

88 **10. White Belgian.**—An excellent variety, differing only in colour from the Short Red.

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IV. PASTINACA.*

PASTINACA SATIVA. (*Tourn.*)

PASTINACA SATIVA.

Parsnip.

Belonging to Class Exogens or Dicotyledons; Umbellal Alliance of Lindley; Natural Order, Apiaceæ; Linn. Cl. 5, Ord. 2.

English—PARSNIP. | *French*—PANAIS.

Varieties.

THE cultivated varieties of Parsnip differ from the common or wild sort, in the same manner that the cultivated carrots do from the wild one, viz., by having thick fleshy roots, instead of small and hard ones. The cultivation of the parsnip in the fields for the purpose of feeding cattle, has hitherto been most successfully practised in the islands of Jersey and Guernsey, also in some parts of France, and the south of England. The produce has been said to be greater than that of the carrot, and that the plants are also hardier or less liable to disease; but in Scotland any experiments hitherto made do not appear to have been attended with any marked success, more than what might have been expected from carrots under similar circumstances. The parsnip will, however, succeed on a somewhat stronger soil than the carrot. The only cultivated varieties of parsnip are the following:—

1. **Common Long Rooted.**—Roots fusiform, thick, fleshy, and very long, with a somewhat rounded or convex top; entirely white. 89

2. **Long Jersey.**—This, which is an improved variety of the Common, differs from it in being larger and thicker towards the top, which is concave; and is the variety cultivated in Jersey, and more recently in some parts of France and England. 90

3. **Turnip Rooted.**—This is a small and unimportant variety, only suited for garden culture, and at once distinguished from the others by its short and somewhat turnip-shaped oots. 91

* From *pastinum*, a dibble, in allusion to the form of the root.

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SECT. II.—TUBEROUS ROOTED PLANTS.

I. SOLANUM.* (*Linn.*)

Belonging to Class Exogens, or Dicotyledons; Solanal Alliance of Lindley; Natural Order, Solanaceæ, Linn. Cl. 5, Ord. 1.

S. TUBEROSUM. Potato.

I. SOLANUM TUBEROSUM.

English—POTATO. | *German*—KARTAFFEL. | *Spanish*—PATATA.
French—POMME DE TERRE. | *Portuguese*—BATATA. | *Italian*—TARTUFFLO.

"Let it rain potatoes!"

MERRY WIVES OF WINDSOR, *Act IV., Sc. 1.*

Introduction.

THERE can be little doubt that the English name of this valuable esculent was derived from the *Batata*, or sweet potato, which was known in this country several years previously to the introduction of the common potato. Although, as stated in the Introduction (page 10), the potato made its appearance in Britain towards the latter end of the sixteenth century, it did not come into general cultivation for about two hundred years subsequently. To Sir Walter Raleigh the honour is generally accorded of having first brought the potato to this country, while some writers ascribe its introduction to Sir Francis Drake, others to Sir John Hawkins; but, evidently, with no sufficient foundation.

* The derivation of this word, according to Paxton, is very doubtful. Some derive it from *sol*, the sun; others say it is *sulanum*, from *sus*, being serviceable in disorders of swine; and others assert that it is from *solor*, to comfort, refering to its soothing narcotic effects.

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Noticed by Gerarde.

In Gerarde's Herbal (date 1597), it is described as the potato of Virginia (*Batata Virginiana, sive Virginiarum*) to distinguish it from the sweet potato of Spain. The old botanist says, "The roote is thicke, fat, and tuberous; not much differing in shape, colour, or taste, from the common potatoes (*Convolvulus Batatas*), saving that the rootes hereof, are not so great nor long; some of them round as a ball, some ovall or egge fashion, some longer, and others shorter. It groweth naturally in America, where it was discovered, as reporteth C. Clusius (who was born at Arras in French Flanders, 1526); since which time I have received rootes hereof from Virginia, otherwise called Noremberga, which grow and prosper in my garden as in their owne native countrie. The Indians do call this plant *Papus* (meaning the rootes), by which name also the common potatoes are called in those Indian countries. We have the name proper unto it mentioned in the title, because it hath not only the shape and proportion of potatoes, but also the pleasant taste and virtues of the same. We may call it in English, Potatoes of America or Virginia. They are a foode, as also a meate for pleasure, equal in goodnesse and wholesomness unto the common potato, being either rosted in the embers, or boiled and eaten with oile, vinegar, and pepper, or dressed any other way by the hand of some cunning in cookerie."

Efforts to encourage its cultivation.

The importance of this plant was early recognised by the Royal Society, which, in 1633, took active steps to encourage its cultivation. Notwithstanding, however, and the general acknowledgement of its value as an article of food, the potato continued to be cultivated simply as a garden curiosity until the middle of the eighteenth century. We must refer our readers to the Introduction (page 10) for an account of the early cultivation of the potato in Scotland.

Potato disease.

Before the late mysterious disease visited our fields, the potato, by political economists, was considered, next to wheat, of the greatest importance as human food; leaving out of view the circumstance, that, in years of scarcity, it afforded food fully three months earlier than the cereal grains.

Importance of the potato.

The vast importance of the potato in the agriculture of this country, the liability to disease in some varieties, from which others are in a great measure ex-

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Importance of the potato.

empted, the adaptation of some varieties to particular soils, with the difference in quality and produce, induced, about thirty years since, considerable attention, on our part, to the cultivation of the then known most valuable varieties, and the acquisition of others, the results of which were published in the ninth volume of the "Prize Essays and Transactions of the Highland Society," and afterwards republished, in a tabular form (combined with further observations), in our "Agriculturist's Manual," to which the reader is referred. These tables contain a list of all the known varieties, comprising notices as to the habit of growth, nature and colour of foliage and flower; the shape and colour of the tubers, and peculiarities of the skin; with general remarks as to their use and comparative value for the table; forming, it is presumed, upon the whole, a list from which the cultivator may easily select suitable varieties, and reject such as may appear either unadapted to his soil, or which, for other reasons, may seem unworthy of culture.

Classification of varieties.

In the following pages we have adopted the most useful and practical classification of varieties, which are grouped without reference either to form or colour. In the nomenclature, the names by which they are best known in Scotland are used; but an examination of the models in the Collection will enable our English friends to recognise some old friends, although presented under, to them, new names. All the varieties enumerated were grown in our Experimental Grounds: soil, black loam of medium texture, and of a medium degree of fertility.

Class I.

CLASS I.

Earliest garden sorts.

EARLIEST GARDEN SORTS, ADAPTED FOR FORCING, ON ACCOUNT OF THEIR DWARF HABIT OF GROWTH.

92 **1. Early Frame, Common.**—Stem slightly reclined, about one foot and a-half high; tuber medium sized and round; colour whitish and roughish; mealy, good flavour, and healthy.

93 **2. Early Frame, Dwarf.**—Stem slightly reclined, and about one foot high; tuber small and round; colour whitish and smooth; waxy, inferior flavour, and rather unhealthy. First introduced by Messrs Gordon, Thomson, & Co., seedsmen, London.

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CLASS I. Early forcing.

3. Fox's Early Delight.—Stem growing upright; about one foot and a-half high; tuber slightly hollow at the ends, of a roundish shape; colour whitish, and slightly rough netted-like; mealy, superior flavour, and healthy. 94

4. Fox's Early Globe.—Stem slender and reclining, about one foot high; tuber round and few eyed; colour whitish, slightly rough, and netted-like; mealy, good flavour, and healthy. 95

5. Fox's John Bull, or Early Kidney.—Stem slender and reclining, about one foot and a-quarter high; tuber long, of nearly uniform thickness; colour whitish and smooth; pretty mealy, good flavour, and healthy. 96

6. Foxly.—Stem spreading, and about one foot and a-quarter high; tuber irregularly round and small; colour whitish, and very smooth; waxy, inferior flavour, and unhealthy. 97

7. London Dwarf Kidney.—Stem slender and reclining, about one foot high; tuber flat, thickest near the point, eyes prominent; colour whitish, and smooth; waxy at small end, indifferent flavour, and pretty healthy. 98

8. Ross's Early.—Stem spreading, about one foot and a-half high; tuber round and medium sized; colour whitish, and roughish; mealy, good flavour, but very unhealthy. 99

9. Williamson's Favourite.—Stem slender and reclining, about one foot and a-half high; tuber slightly elongated; colour whitish and smooth; mealy, good flavour, and healthy. 100

CLASS II.

CLASS II. Earliest garden.

EARLIEST GARDEN POTATOES, NOT SO WELL ADAPTED FOR FORCING AS THE PRECEDING, ON ACCOUNT OF THEIR TALLER HABIT OF GROWTH.

10. Ash-Leaved Early.—Stem upright and loose, about one foot and three-quarters high; tuber roundish; colour whitish, and roughish; medium flavour, but healthy. 101

11. Ash-Leaved Kidney.—A good sized early garden sort; tuber white, long, round at one end, and tapering to the other; skin rough; mealy. 102

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Class II. Earliest garden.

12. **Chapman's Early Kidney.**—Medium between the Ash-Leaved and July Kidney; resembles the latter in form.

103 13. **Dryden Early Kidney.**—Stem pretty upright, about one foot and three-
104 quarters high; tuber large, with few and prominent eyes; colour whitish and slightly rough; medium flavour, and pretty healthy.

105 14. **Early Seedling.**—Stem slender and straggling, about two feet high; tuber round, few eyed; colour whitish and smooth; mealy, superior flavour, and very healthy.

106 15. **Hopetoun Early.**—Stem strong and upright, about two feet high; tuber large, round, with few eyes; colour dull white, rough, and netted-like; mealy, good flavour, and very healthy. Perhaps the most superior variety in the class to which it belongs.

107 16. **Invermay Early.**—Stem spreading, about one foot and three-quarters high; tuber round; colour very white and smooth; mealy, good flavour, and very healthy. A very superior variety, originally introduced by Alexander Muirhead, gardener to Mr. Belshes of Invermay, Perthshire.

108 17. **July Kidney.**—A small variety, inferior to the Ash-Leaved; regular oblong in shape; waxy flavour.

109 18. **Kay's Early American.**—Stem slender, and spreading, about one foot and a-half high; tuber slightly oblong and flattish; colour light red, and roughish; mealy, medium flavour, and very healthy.

110 19. **London Early Round.**—Stem rather upright and compact, about two feet high; tuber large, round, with small deep eyes; colour whitish, and roughish; mealy, good flavour, but rather liable to curl.

111 20. **London Particular.**—Stem rather upright and compact, about two feet high; tuber round, or slightly elongated; colour whitish, and roughish; medium good flavour, and very healthy.

112 21. **Magnificent Kidney.**—Stem rather upright, and compact, about one foot and three-quarters high; tuber small, not very oblong; colour white and smooth; mealy, good flavoured, but apt to curl.

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CLASS II.
Earliest garden.

22. Main's Parti-Coloured Seedling.—Resembles the Ash-Leaved Kidney in form, but rather larger, and the round end of a deep purple colour. Raised in 1850. 113

23. Malcolm's Early Red.—A small roundish, hollow-eyed, and bright red coloured sort. In produce, this is found to be considerably inferior to many of the early white sorts; but its good quality and similarity in colour to esteemed late sorts entitles it at least to a limited share of culture. 114

24. Manly.—Stem spreading, about one foot and three-quarters high; tuber round and pretty large; colour white and smooth; mealy, good flavour, but not very healthy. 115

25. Musgrove's Snow-White.—Stem rather upright and compact, about two feet high; tuber round, hollow at the point; colour remarkably white, rough, and netted; medium, good flavour, and very healthy. 116

26. New Elm-Leaved Kidney.—Stem rather upright and compact, about one foot and three-quarters high; tuber smallest towards the stalk; colour white and smooth; medium flavour, and pretty healthy. 117

27. Spanish Early Dwarf.—A small white sort, of superior quality, and very dwarf growth, its stems seldom attaining a height of more than five or six inches; but deficient in produce as well as rather liable to disease. 118

28. Zegonzac's Early.—Tubers of medium size, whitish colour, and oblong shape, rather deeply hollowed at the eyes and insertion of the stem. This variety is of French origin, and was recommended to growers in that country in 1836, as possessing the property of early maturing to such a degree as to render it capable of producing two crops in the season; but an experience of some years in our Experimental Grounds proves it to be later than some of the earliest sorts generally grown in this country, while it is also inferior to most of them in quality. 119

CLASS III.

SECOND EARLY GARDEN POTATOES.

CLASS III.
Second early garden

29. Cape of Good Hope Kidney.—Stem rather upright, about one foot and 120

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Class III. Second early garden.

a-quarter high; tuber large, crooked, and slightly flattened; colour white and roughish; mealy, superior flavour, but very subject to curl.

121 **30. Caraccas.**—A late prolific, and healthy growing sort; of superior quality, roundish, slightly flattened shape, reddish colour, and rather under the medium size. It was found wild in Caraccas; and introduced by Mr. J. Hill of Liverpool. This variety is also known by the names of the American, and New Prince Regent Potato.

122 **31. Chapman's New Spring.**—A late variety, reared by Mr. Chapman, Brentford End, London, who reports them to be in perfection for use, from November till June. Dr. Lindley bears testimony to their excellence of quality in the *Gardener's Chronicle* for 2nd April 1842. No comparative trials of this variety has yet been made in Scotland.

123 **32. Colonel Spen's Black Kidney.**—A smallish sized, dark coloured, late keeping sort; presenting, on being cut, a blackish purple zone near, and parallel with, the circumference. The late Colonel Spens of Craigsanquhar, from whom this sort was received in 1839, long grew, and especially recommended it, for spring and early summer use.

124 **33. Dutch Early.**—Stem very upright and compact, about one foot and a-half high; tuber small, with large eyes, often pointed; colour white and smooth; rather waxy, indifferent flavour, but very healthy.

125 **34. Dwarf American Early.**—Stem pretty upright, about one foot high; tuber slightly flattened; colour white and rough; mealy, good flavour, and pretty healthy.

126 **35. Early Champion.**—Stem rather upright and compact, about two feet high; tuber round, eyes few, small, and deep; colour whitish, very rough, netted-like; mealy, medium flavour, and pretty healthy.

127 **36. Early Cluster.**—Stem slender and spreading, about one foot and a-quarter high; tuber round; colour whitish, rough, and apt to crack; mealy, but rather unhealthy.

128 **37. Early Prolific.**—Stem slender and spreading, about one foot and a-half

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CLASS III. Second early garden.

high; tuber very small and round; colour whitish, roughish, and netted; mealy, good flavour, and pretty healthy.

38. Early Wellington.—Stem slender and spreading, about one foot and a-quarter high; tuber round; colour yellowish white, and very rough; mealy, good flavour, and very healthy. 129

39. Goldfinder.—A very tall, luxuriant growing, and productive variety, with white, slightly oblong, and somewhat flattened tubers; reputed as being of superior quality, and yielding a good crop, even on inferior soils, and with little manure. 130

40. Lawhead Early Red.—Stem slender and spreading, about two feet high; tuber very round; colour dark red and roughish; mealy, good flavour, and healthy. 131

41. Lawhead Early White.—Stem rather slender and spreading, about one foot and a-half high; tuber rather large; colour whitish, very rough, and netted; mealy, good flavour, and pretty healthy. 132

42. Lawson's Conqueror.—Very similar to Peffermill Prolific, but tubers generally of a larger size. 133

43. Matchless Kidney.—Stem upright and compact, about one foot and a-quarter high; tuber oblong, eyes few and prominent; colour white and smooth; mealy, superior flavour, and medium healthy. 134

44. Musgrove's Giant Kidney.—Stem rather upright, about one foot and a-half high; tuber large, long, and thick; colour white and roughish; mealy, good flavour, but very subject to curl. 135

45. New Early Windsor Seedling.—Stem rather slender and spreading, about one foot and a-quarter high; tuber round, colour white, and smoothish; mealy, good flavour, and very healthy. Of excellent quality, being dry, mealy, of an agreeable flavour, and very prolific. 136

46. Painted Lady, Early.—Stem upright and compact, about one foot and a-half high; tuber irregularly round; colour white and reddish; rather waxy, medium flavour, and healthy. 137

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Second early garden.

47. **Peffermill Prolific.**—Medium sized; skin roughish, eyes deep; roundish shape, inclining to a flattened oblong; colour buffish white.

138 48. **Prince of Wales Early.**—Stem strong and upright, about two feet high;
139 tuber large, slightly oblong, and flat; colour white and smooth; rather mealy, good flavour, and very healthy.

140 49. **Prince Regent.**—The commonest white potato in the Scotch market. Similar as to quality, but rounder in shape, than the Peffermill Prolific.

141 50. **Purple Skin Early.**—Stem dwarf and bushy, about one foot high; tuber small and round; colour purplish; medium flavour, and very subject to curl.

142 51. **Ross's Pigmy Kidney.**—Stem spreading, about one foot high; tuber small, long, crooked, and few eyed; colour whitish and roughish; mealy, superior flavour, and medium healthy.

143 52. **Rough Rob's.**—The potato to which this name has been applied is a healthy growing and prolific second early, with roundish shaped, slightly flattened, and reddish coloured, rough skinned tubers; and is much esteemed in the lower parts of Argyllshire and neighbouring districts, for the purpose of succeeding the earlier white sorts in the Greenock and other markets.

144 53. **Seek-no-Farther.**—Stem compact and bushy, about one foot and a-half high; tuber round; colour white, rough, and slightly netted; mealy, good flavour, and healthy.

145 54. **Shaw's Early.**—Stem rather strong and upright, about two feet high; tuber large, irregular, and round; colour dull white and very rough; rather waxy, medium flavour, and pretty healthy.

146 55. **Smith's Yellow Peruvian.**—Tubers rather under the medium size, roundish, or slightly elongated, with numerous deeply sunk eyes, and of a yellowish white colour. This is a healthy growing and superior late sort, having a peculiar yellow coloured flesh, and was brought into notice by Mr. Thomas Smith of Penfillin, Dumfriesshire, who received it from its native country, Peru.

147 56. **Tall American Early.**—Stem strong and pretty upright, about two feet

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high; tuber flattened; colour very white and rough; mealy, good flavour, and very healthy. CLASS III. Second early garden.

57. Taylor's Forty-Fold.—Stem slender and spreading, about one foot and a-half high; tuber oval and much flattened; colour rough and dull reddish; mealy, superior flavour, and very healthy. 148

58. White Sutherland Kidney.—Stem very upright and compact, about one foot and three-quarters high; tuber curved, flat, and small towards the stalk; colour whitish, rough, and netted; mealy, good flavour, and healthy. 149

CLASS IV.

CLASS IV. Early field.

EARLY FIELD POTATOES, THE LEAVES AND STEMS OF WHICH (UNDER ORDINARY CIRCUMSTANCES) ARE DECAYED BY THE TIME WHEN THEY ARE USUALLY TAKEN UP, AND THE TUBERS OF WHICH ARE THEN FIT FOR USE.

59. Aberdeen Favourite, or Possie's.—Stem stout and bushy, about two feet high; tubers rather flattened, with pretty deep eyes; colour dull white; rather waxy, indifferent flavour, but a healthy and free grower. 150

60. Aberdeen White.—Stem strong, upright, and compact, about two feet and a-half high; tuber slightly elongated and flattened; colour whitish, and smooth skinned; medium flavour, and pretty healthy. 151

61. Agricultural Late Kidney.—In length, nearly thrice its average diameter, slightly flattened and thickened towards the point; eyes few and very shallow, or almost level with the general surface; colour whitish, and quality superior. Two tubers of this variety were received by us from the late Mr. Loudon, in November 1838, the largest of which measured 10 inches in length by 11 inches in circumference at the middle, and weighed 2 lb. 6½ ounces. It is recommended by its originator, Mr. Bowndes of Enfield, as combining superiority of quality with unusual size; with us, however, it has been surpassed by many of the commoner sorts in actual weight of produce; and hence its merits seem by no means such as to entitle it to special recommendation. 152

62. Albany Kidney.—Stem strong and rather upright, about two feet and 153

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Class IV. Early field.

a-half high ; tuber large, slightly curved, flat, and broadest near the point ; colour white and roughish ; mealy, superior flavour, and very healthy.

154 **63. American Dandy Seedling.**—Skin rather smooth, marked with irregular bands of red on a whitish ground, the white prevailing more towards the eyes ; not so well adapted for table use as the Orkney Red.

155 **64. American Black.**—Stem strong and upright, about two feet and a-half high ; tuber irregularly round ; colour dark bluish purple, with a few small white streaks ; medium, good flavour, but very subject to curl.

156 **65. Barbadoes Kidney.**—Stem rather upright, about two feet and a-half high ; tuber straight, much flattened, and rather small ; colour whitish, sometimes slightly tinged with red near the point ; rather waxy, and pretty healthy.

157 **66. Bedfordshire Kidney.**—Stem rather upright, about two feet and three-quarters high ; tuber long, thick, and straight ; colour reddish ; medium, good flavour, and healthy.

158 **67. Bevisford Kidney.**—Stem pretty upright, about two feet high ; tuber straight and much flattened ; colour whitish and roughish ; mealy, superior flavour, and pretty healthy.

159 **68. Biscuit.**—Stem spreading, about two feet and a-quarter high ; tuber rather small and round ; colour smooth and light brownish ; mealy, good flavour, and very healthy.

160 **69. Black Seedling.**—Stem upright and compact, about two feet and a-half high ; tuber round ; colour smooth dark reddish purple ; rather mealy, good flavour, but very subject to curl.

161 **70. Blue Don.**—Stem strong and spreading, about two feet and a-half high : tuber round, and hollow at stalk ; colour dark bluish purple, with small whitish blotches ; mealy, and very good flavour. Much esteemed in some parts of Ireland.

162 **71. Blue Horn Kidney.**—Stem upright and compact, about two feet high ; tuber very small next the stalk, and slightly curved ; colour very dark bluish purple ; medium flavour, and healthy.

163 **72. Buff.**—Stem straggling, about two feet and a-half high ; tuber large and

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CLASS IV. Early field.

round; colour roughish and light brownish red; mealy, superior flavour, and very healthy.

73. Calico.—Stem rather upright, about two feet and three-quarters high; tuber round, or slightly flattened; colour rough light brownish red, with small portions of white near the stalk; mealy, medium flavour, and healthy. 164

74. Captain Fraser's Seedling.—Stem pretty upright, about two feet high; tuber rather straight and equal in thickness; colour whitish, with a few reddish streaks about the point; mealy, superior flavour, and medium healthy. 165

75. Common, or Edinburgh Don.—Stem strong spreading, about two feet and a-half high; tuber round and hollow at stalk; colour white, and reddish purple about the eyes; mealy, good flavour, and pretty healthy. As a field potato this variety is more extensively cultivated in Mid-Lothian, and adjacent districts, than any other. When cooked, its tubers are much whiter fleshed than those of the Perthshire Red, and some others of the more famed field sorts; they are also mealy, and of an agreeable flavour, but when grown to a large size, often hollow, or hard and waxy, in the centre. 166

76. Cork Red.—Stem spreading, about two feet high; tuber flattened, slightly, oblong and pointed; colour roughish and reddish brown; mealy, good flavoured and healthy. Are much esteemed in some parts of Ireland. 167

77. Dickson's Early.—Stem upright, about two feet and a-half high; tuber flattened, with deep eyes; colour dull white; rather waxy, indifferent flavour. 168

78. Dodd's Seedling.—Stem slender and spreading, about two feet and a-half high; tuber slightly oblong, with deep eyes; colour white and smooth; medium, good flavour, and healthy. 169

79. Douglas's Irish Kidney.—Stem spreading, about two feet high; tuber long and thickest towards the point; colour dark bluish purple; mealy, good flavour, and healthy. 170

80. Dudgeon's Black.—Stem slightly spreading, about two feet high; tuber slightly oblong; colour dark reddish purple; mealy, very good flavour, but a little subject to curl. 171

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Class IV. Early field.

172 **81. Dudgeon's Early Red.**—Stem slightly spreading, about two feet high; tuber slightly oblong and flattened; colour rough and deep reddish purple; medium flavour, and healthy.

173 **82. Dunlop's Red.**—Stem upright, but slender-like, about two feet high; tuber round; colour dark red; mealy, good flavour, but a little subject to curl.

174 **83. Early Field Kidney.**—Stem upright and compact, about two feet high; tuber small towards the stalk, and flattened; colour whitish, and very rough skinned; medium flavour, and very healthy.

175 **84. Early Pale Red.**—Stem upright and compact, about two feet and a-half high; tuber small, round, or slightly oblong; colour rough and pale red; very mealy, superior flavour, but rather unhealthy.

176 **85. Falconer's Kidney.**—Stem rather upright, about two feet and a-half high; tuber much elongated; colour whitish, light red towards the point; mealy, good flavour, but rather unhealthy.

177 **86. Farmer.**—Stem rather upright, about three feet high; tuber hollowed at both ends, with large deep eyes; colour red, but white about the hollowed point, and rough; mealy, very good flavour, and very healthy.

178 **87. Fife Blue.**—Stem spreading, about two feet high; tuber large and roundish; colour darkish blue, with white blotches near the stalk; mealy, good flavour, and pretty healthy.

179 **88. Fife White.**—Stem spreading, about two feet and a-half high; tuber round, or slightly oblong and flattened; colour whitish and roughish; waxy, medium flavour, and pretty healthy.

180 **89. Farmer's Black Seedling.**—Stem upright, strong, and compact, about two feet and a-half high; tuber roundish; colour dark purple, with whitish eyes; waxy, bad flavour, and very subject to curl.

181 **90. East Lothian Red.**—A round potato of great merit, bearing some resemblance to the Perth Red; eyes large, but not deep; skin of a deep red; pretty good flavour.

182 **91. Fill Basket.**—Stem loose and straggling, about two feet high; tuber

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CLASS IV. Early field.

round; colour whitish, and slightly rough; mealy, good flavour, and pretty healthy.

92. Flamingo, or Red Early.—Stem upright and compact, about two feet and a-half high; tuber round; colour reddish purple; mealy, very good flavour, but subject to curl. 183

93. Gamekeeper's Round White.—Stem spreading, about two feet and a-half high; tuber slightly flattened; colour dull white, rough, and netted-like; mealy, good flavour, and pretty healthy. 184

94. Imperial Kidney.—Stem strong, upright, and rather close, about two feet and a-half high; tuber straight and slightly flattened; colour whitish and roughish; rather mealy, medium flavour, and pretty healthy. 185

95. Irish Apple.—Stem strong, spreading, about two feet and a-half high; tuber much hollowed at both ends; colour bright light red about the eyes; mealy, very good flavour, and pretty healthy. 186

96. Irish Seedling.—Stem spreading, about two feet and a-half high; tuber round; colour reddish purple; mealy, good flavour, but very subject to curl. 187

97. Kilspindie Bloom.—Stem pretty strong and upright, about two feet and a-half high; tuber oval and flattened; colour dark bluish purple; very mealy, superior flavour, and healthy. So named from having been originally raised from seed by the late Rev. A. Dow, minister in the parish of Kilspindie, Carse of Gowrie. A much and deservedly esteemed sort, reckoned, however, less prolific than the Perthshire Red, except when sown on moorish or peaty soils, for which it seems admirably adapted. 188

98. Lady Mary.—Stem spreading, about two feet high; tuber often slightly oblong; colour reddish, small white and purplish streaks; mealy, superior flavour, but very subject to curl. 189

99. Lark.—Stem spreading, about two feet high; tuber often smallest towards the stalk, and more flattened; colour yellowish and very smooth; rather mealy, indifferent flavour, but very healthy. 190

100. Late Champion.—Stem rather upright and compact, about one foot and 191

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Class IV. Early field.

a-half high; tuber roundish and rather large; colour dull white; medium, good flavour, but rather subject to curl.

192 **101. Late Prolific.**—Stem loose and straggling, about one foot and three-quarters high; tuber small and round; colour very white; mealy, good flavour, but subject to curl.

193 **102. Late White American.**—Stem pretty upright, about two feet and a-quarter high; tuber a little flattened, with many eyes; colour whitish and smooth skinned; mealy, good flavour, and pretty healthy.

194 **103. Late White.**—Stem upright, about two feet and three-quarters high; tuber slightly oblong and flattened; colour whitish and roughish; mealy, good flavour, and pretty healthy.

195 **104. Leadington White.**—A new and very prolific field sort, introduced by Mr. James Baldin, Lennoxlove, Haddington.

196 **105. Leather Coat.**—Stem strong and slightly spreading, about two feet and a-half high; tuber slightly oblong, and much flattened; colour yellowish white, and remarkably rough; mealy, superior flavour, and healthy. An esteemed variety, formerly grown pretty extensively, and is still in cultivation, in some of the middle districts of Scotland, but considered as being less prolific than the Perthshire White.

197 **106. Long Red Kidney.**—Stem rather upright and compact, about two feet high; tuber equal in thickness, long, and bent; colour dark red, and rough; medium flavour, and very healthy.

198 **107. Lord Lauderdale's Kidney.**—Stem pretty upright, about two feet and three-quarters high; colour bright red; medium size, good flavour, and healthy. A remarkable long straight sort, with numerous and regularly placed eyes.

199 **108. Marbled.**—Stem rather upright, about two feet and a-half high; tuber round; colour marbled, purplish red and white, and smooth; rather waxy, indifferent flavour, and very subject to curl.

200 **109. Miller's Thumb.**—Stem upright, strong, and compact, about two feet and a-half high; tuber curved, thickest towards the point, and rather small; colour reddish; mealy, superior flavour, and medium healthy.

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CLASS IV. Early field.

110. Old Flat White.—Stem strong and slightly spreading, about two feet and a-half high; tuber slightly oblong much flattened; colour very white and smooth; mealy, very superior flavour, and healthy. This variety was formerly much esteemed, and cultivated almost exclusively in some districts of Perth- and Forfar-shires; but although it is generally allowed to be superior to the Perthshire Red, its culture has been almost entirely superseded by it. 201

111. Onion Potato.—Stem upright, about two feet high; tuber round, or very slightly oblong; colour purplish red, whitish towards the stalk; very mealy, good flavour, but rather subject to curl. 202

112. Paterson's White.—Stem rather upright, about one foot and three-quarters high; tuber rather hollowed at the ends; colour medium white and smooth; mealy, good flavour, but very subject to curl. 203

113. Perthshire Large-Eyed.—Stem pretty upright, about two feet and a-half high; tuber large, oblong, and with large eyes; colour rough, rather netted-like, bright red; rather waxy, medium flavour, but very healthy. 204

114. Perthshire Red.—Stem slightly spreading, about two feet high; tuber slightly oblong, medium sized, and flattened; colour pretty smooth red; mealy, good flavour, and healthy. There are three varieties of the Perthshire Red, viz., the True, or Oblong Flat, the Small-Eyed Round, and the Large Deep-Eyed. The Oblong Flat variety was formerly distinguished by the names of Shanual, or Red Coventry, from having been first sent to Perthshire, in 1805, by the late Dr. Coventry, to Mr. Gorrie, then at Meiklour House. The origin of the Small-Eyed Round variety is not known; it is about equal to the first in quality, but rather deficient in produce. The large Deep-Eyed variety, which, although rather deficient in quality, is the strongest grower, and most productive of either, may probably have been introduced from Fife, as it appears to be the same as a specimen under the name of Fife Red, received from Cupar-Fife. In Perthshire these three are now cultivated promiscuously, under the names of Common, Scotch, or Perthshire Reds, the latter of which has been applied since they became so much esteemed in the London markets. 205

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Class IV.
Early field.

206 **115. Perthshire Small-Eyed.**—Stem slightly spreading, about two and a-quarter feet high; tuber small, round, slightly flattened, and small eyes; colour pretty smooth red; mealy, good flavour, and healthy.

207 **116. Peruvian.**—Stem rather upright and compact, about two feet high; tuber round and rather small; colour dull white, tough, and liable to crack; medium size, indifferent flavour, and rather unhealthy.

208 **117. Plough Boy.**—Stem loose and rather straggling, about two feet high; tuber much hollowed at both ends; colour whitish, slightly interspersed with reddish purple about the eyes; mealy, good flavour, and pretty healthy.

209 **118. Poor Man's Profit.**—Stem rather upright, about two feet high; tuber round; colour dark reddish purple; mealy, superior flavour, but rather subject to curl.

210 **119. Quebec Profit.**—Stem upright and compact, about two feet and three-quarters high; rather large, oblong, slightly flattened; colour very white and smooth; mealy, very superior flavour, and healthy.

211 **120. Rafford Kidney.**—Stem straggling, about one foot and a-half high; tuber straight, and about equal in breadth, throughout small; colour whitish and smooth; mealy, superior flavour, but rather subject to curl.

212 **121. Red Bread Fruit.**—Stem rather upright, about two feet and three-quarters high; tuber slightly oblong and flattened; colour dull red, roughish towards the point; mealy, good flavour, and very healthy.

213 **122. Red Nose Kidney.**—Stem spreading, about one foot and a-half high; tuber long, often slightly curved; colour whitish, with a reddish point about the eyes; mealy, good flavour, and healthy.

214 **123. Red Parroquet.**—Stem rather straggling, about one foot and a-quarter high; tuber large and much hollowed at the stalk; colour irregularly blotched with white and reddish purple; mealy, good flavour, and pretty healthy.

215 **124. Roasting.**—Stem slightly spreading, about two feet high; tuber slightly oblong, with many eyes; colour whitish and roughish; waxy, bad flavour, but pretty healthy.

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CLASS IV.
Early field.

125. Rohan, or Prince de Rohan.—Tubers of large size, roundish shape, hollow-eyed, and whitish coloured. Raised from seed in 1829 or 1830, by an amateur in Geneva, who reared unprecedented crops of it, and used every means to prevent its getting into the hands of any other cultivator, until he was tempted to part with a tuber in exchange for some rare and valuable plants of cacti, which Prince Charles de Rohan had received from South America; but even then the Prince only obtained it upon condition that he should never send any of the produce to Holland, Belgium, England, Prussia, or Germany. From his gardens, however, it found its way into France, in 1834, and from thence two tubers were brought over to Scotland by our Mr. Lawson in autumn 1836, the produce of which we exhibited at the Highland and Agricultural Society's Show at Dumfries, in 1837. The highly flattering account of its quality and produce given by the originator of this variety, combined with his attempt to retain its exclusive culture, caused it to be sought after with the greatest avidity, so that it is now pretty generally known, both throughout Europe and North America; but the results of several years' experience shew, that in Scotland it proves to be decidedly inferior for the table, while it is at least equalled by several others for feeding cattle. 216

126. Saunderson's Dunbar.—Stem spreading, about two feet and a-half high; tuber round; colour whitish, roughish, and apt to crack; mealy, very superior flavour, and pretty healthy. 217

127. Saunderson's Red Rose.—Stem upright and compact, about two feet and three-quarters high; tuber flattened, or hollow towards the stalk; colour light brownish red, darkish towards the point, and blotched with white; mealy, good flavour, and healthy. 218

128. Shetland Black.—Stem upright, strong, and compact, about two feet and a-half high; tuber roundish; colour bright purple, with whitish eyes; mealy, very fine flavour, but subject to curl. 219

129. Shetland Red.—Stem upright and compact, about two feet and a-quarter high; tuber round; colour reddish purple; waxy, indifferent flavour, and very subject to curl. 220

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Class IV. Early field.

221 **130. Variable-Shaped Kidney.**—Stem weak and spreading, about two feet high; tuber variable, nearly round, and long; colour very white and smooth; medium flavour, medium healthy.

222 **131. Walls of Great Britain.**—Stem stiff and upright, about two feet and a-half high; tuber broadish and slightly flattened near the point; colour whitish and pretty smooth; mealy, superior, flavour, and very healthy.

223 **132. White Bread Fruit.**—Stem upright, about two feet and three-quarters high; tuber round, or slightly oblong and flattened; colour whitish and roughish; mealy, superior flavour, and pretty healthy.

224 **133. Yellow Round.**—Stem rather upright and compact, about two feet and a-half high; tuber often smallest towards the stalk, eyes deep; colour yellowish and very smooth; rather waxy, indifferent flavour, but very healthy.

Class V. Late field.

CLASS V.

LATE FIELD POTATOES, THE FOLIAGE OF WHICH, IN ORDINARY SEASONS, DOES NOT DECAY UNTIL INJURED BY FROST, AND THE TUBERS OF WHICH GENERALLY REQUIRE TO BE KEPT FOR SOME TIME BEFORE BEING FIT FOR USING TO THE GREATEST ADVANTAGE.

225 **134. Entire Black.**—Stem strong, upright, and compact, about three feet high; tuber round; colour dull dark purple and roughish; medium size, medium flavour, and very healthy. This variety is easily distinguished from all others by its flesh presenting, on being cut, a dark purple or marbled-like appearance, from which it derives its name. Although possessing rather a disagreeable appearance when cooked, this sort is very good as a table potato, when kept over the winter, before any of the early sorts are fit for using.

226 **135. Esslebach.**—Stem pretty upright and compact; tuber oblong and flattened, often slightly curved; colour roughish and dull red; medium size, good flavour, and healthy.

227 **136. Lancashire Pink-Eyed.**—Stem strong and upright, about two feet and

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CLASS. V.
Late field.

a-half high; tuber roundish; colour whitish, with pink eyes; rather waxy, indifferent flavour, but very healthy.

137. Late Jersey.—Stem upright and compact; about two feet and three-quarters high; tuber slightly oblong and flattened; colour rough and dark red; rather waxy, indifferent flavour, but very healthy. 228

138. London Blue.—Stem bushy, about two feet and a-half high; tuber round; colour dark bluish purple, and rough; mealy, good flavour, and very healthy. 229

139. Orchard.—Stem bushy, about two feet high; tuber roundish and slightly flattened; colour dull red; medium size, medium flavour, and very healthy. 230

140. Pink-Eyed Irish Round.—Stem strong and upright, about two feet and three-quarters high; tuber roundish; colour whitish, with pink eyes; rather mealy, good flavour, and very healthy. 231

141. Robertson's Giant Kidney.—Stem strong and bushy, about two feet and a-half high; tuber thickish kidney-shaped; colour dull reddish purple, and rough; rather waxy, medium flavour, but very healthy. 232

142. Sawyer's Red.—Stem rather straggling, about two feet and a-half high; tuber slightly oblong, flattened, and pointed; colour dull red, approaching to purple; rather waxy, indifferent flavour, but very healthy. 233

143. Scotch Black.—Stem strong, upright, and compact, about three feet high; tuber round and much hollowed at the stalk; skin shining, colour dull lead, and very rough and netted; medium size, medium flavour, and healthy. The dark colour from which this sort derives its name, is confined to the stems and the skin of the tubers. It has been long in partial cultivation, and is, like the Entire Black, chiefly valuable from being in season for using between the periods of planting and taking up the new crop. 234

144. St. Helena.—Stem upright and bushy, about two feet and a-half high; tuber irregularly roundish; colour whitish, often slightly tinged with red; rather mealy, good flavour, and very healthy. Mr. Morrison, Bellfield, near Dalkeith, having, in 1833, procured two tubers of this variety from St. Helena, 235

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Class V. Late field.

planted them whole, and the produce amounted to sixty of medium, besides a number of a smaller size; these were again planted the following year, and yielded an abundant increase. The introducer considers this a superior variety, and deserving of general cultivation.

236 **145. Staffold Hall.**—Stem pretty upright and bushy, about two feet and a-quarter high; tuber rather flattened, round, or a little oblong; colour dull red, approaching to purple; very mealy, superior flavour, and exceedingly healthy. Mr. Richard Ross of Staffold Hall, Cumberland, obtained the Highland Society's medal in 1827, for its introduction. Mr. Ross has grown this sort successively on a deep rich soil, approaching to clay, for a long period, and has never found it to present the least symptom of curl or disease of any kind, either in its foliage or tubers, and its produce per imperial acre he has found, in several instances, to exceed thirty tons. He further states, that the Staffold Hall potato does not attain its greatest perfection for using until about the end of November, or until it has been pitted for a month or two; and that it remains good until the earlier sorts are ready in the following season; and that, also, from its possessing great solidity, it is better adapted, in cooking, for steaming than boiling. It is worthy of remark, that, from the experiments forming the subject of our Mr. Lawson's paper in the "Highland Society's Transactions," before alluded to, the Staffold Hall, or Late Wellington, as it is sometimes termed, was found superior in specific gravity and quantity of starch contained in a given weight of tubers, to any of the other varieties there enumerated, amounting to seventy-three.

237 **146. Tartar.**—Stem strong and upright, about two feet and a-half high; tuber roundish; colour whitish, with irregular reddish purple streaks; rather waxy, indifferent flavour, and rather subject to curl.

238 **147. Welsh Field.**—Stem rather upright and compact, about two feet high; tuber irregularly round; colour dull pink and smoothish; rather waxy, indifferent flavour, but very healthy.

239 **148. White-Eyed Blue, or Black.**—Stem pretty upright, about two feet and

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three-quarters high; tuber small and irregularly oblong; colour dark bluish purple, with whitish eyes; rather waxy, indifferent flavour, but healthy.

CLASS V. Late field.

CLASS VI.

CLASS VI. Late large cattle.

LATE LARGE, PROLIFIC SORTS, MORE PARTICULARLY ADAPTED FOR FEEDING CATTLE.

149. Balfour's Mangold Wurtzel.—A coarse variety; tubers large; skin deep red; large deep eyes; very prolific. Introduced from America by Dr. James B. Balfour, Kilsyth. 240

150. Brown's Fancy.—Stem rather bushy, about two feet and a-half high; tuber slightly oblong and flattened; colour whitish; medium size, medium flavour, and healthy. They are excellent keepers, and well adapted for feeding horses and cattle, but rather inferior for the table. 241

151. Common Yam.—Stem strong and rather spreading, about two feet and three-quarters high; tuber large and oblong; colour dull pink; waxy, indifferent flavour, very healthy. This and the Wild Potato (No. 161) are distinguished from all the others, on being cut, by having a ring similar to the colour of the skin, a little within and about parallel to the same. The Common Yam is extensively grown for cattle in some parts of Scotland, particularly in the middle counties. 242

152. Connaught Cups.—Stem pretty upright and close, about two feet and three-quarters high; tuber large and slightly oblong; dull reddish pink; mealy, good flavour, and very healthy. 243

153. Cups.—Stem pretty upright and close, about two feet and a-quarter high; tuber large, oblong, and often irregularly shaped; colour dull pink; mealy, good flavour, and very healthy. The Staffold Hall, the Lumpers, and this, are considered the three sorts deserving most attention for growing as cattle food; of these, the Lumpers seem entitled to the preference for weight of produce; but the other two are far superior in quality; the Cup, like the Staffold Hall, being a pretty good kind of potato for eating, when not grown to too great a size. From its tubers, however, being often of rather an irregular or monstrous-like 244

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Class VI. Late large cattle.

shape, they are more difficult to wash or clean than the other two, which, as well as the Pink-Eyed Dairy-Maid, are almost always of a regular form.

245 **154. Daly's Wonder.**—Stem strong, upright, and close, about two feet and a-half high; tuber large, with large deep eyes; colour whitish; medium size, medium flavour, and very healthy.

246 **155. Emperor.**—Stem strong and bushy, about two feet and a-quarter high; tuber large and roundish; colour rough reddish purple; rather mealy, good flavour, but subject to curl. This variety, which is much prized in some districts, has, in the course of its cultivation in our Experimental Grounds, become almost entirely destroyed by curl.

247 **156. Irish Lumpers.**—Stem pretty upright and close, about two feet and a-half high; tuber large, slightly oblong, and much flattened; colour whitish; waxy, bad flavour, but very healthy. Valuable for cattle.

248 **157. Mangold Wurtzel.**—A name under which the Red Yam (No. 160), has of late years been brought into pretty general notice, and under which it still supports the character of being one of the best cattle or feeding potatoes.

249 **158. Ox-Noble.**—Stem rather spreading, about two feet and a-half high; tuber slightly oblong and flattened; colour whitish; rather waxy, indifferent flavour, but very healthy; indeed, never found to present the slightest appearance of curl or other disease.

250 **159. Pink-Eyed Dairymaid.**—Stem rather bushy, about two feet and a-half high; tuber large, roundish, and deep-eyed; colour whitish, and pink, or purplish; rather waxy, indifferent flavour, but very healthy. Introduced from Ireland, in 1833, by Mr. Andrew Howden, Lawhead. Mr. Howden considers this a very coarse and indifferent sort for the table; but, from the astonishing produce which he finds it to yield, it is likely to become very useful for feeding cattle.

251 **160. Red Yam.**—Stem upright and bushy, about two feet and a-half high; tuber large and oblong; colour bright reddish; waxy, indifferent flavour, but very healthy. A very excellent and valuable cattle potato, the cultivation of which is rapidly increasing in those districts where it has been introduced.

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161. Wild Potato.—Stem compact and bushy, about two feet and a-quarter high; tuber slightly oblong and tapering to the point; colour very light pinkish; waxy, bad flavour, but very healthy. CLASS VI. Late large cattle. 252

CLASS VII.

LATE UNPROLIFIC CURIOUS GARDEN SORTS.

CLASS VII. Late garden.

162. Argyllshire Rec.—Prolific, mealy, and keeps till July. 253

163. Asparagus.—Tubers smaller than those of any other sort in the Collection, except the Fairy; of an oblong, somewhat crooked kidney-shape, about the size of, and in shape not unlike, asparagus tops, hence its name. 254

164. Black Kidney.—Medium prolific, and good flavour, but does not keep long. 255

165. Chesnut.—Stem bushy, about one foot and a-half high; tuber small and roundish; colour purple, with reddish eyes; rather mealy, good flavour, but delicate. 256

166. Cucumber.—Bears a near resemblance to the Red Pine-Apple. Received in 1837, from Mr. Dunbar, Barnton, who reported it as being very productive, as well as one of the best table potatoes grown in France. 257

167. Everlasting.—Stem pretty upright and bushy, about two feet high; tuber small, and rather oblong; colour dull reddish pink; waxy, medium flavour, and rather delicate. A late unproductive sort, so named from its tubers possessing a delicate waxy flavour, like that of young potatoes, to preserve which in its original delicacy, the ground is covered over with straw or litter when the stems are killed down in the beginning of winter, so that the tubers may not be injured by frost; they are afterwards taken up as wanted for use. Several of the other late waxy varieties might no doubt be found to answer as substitutes for young potatoes equally well with the Everlasting. It may here be noted that, when young potatoes are required in winter, they may be had of any variety, by retarding the growth of tubers of the previous year, by burying them at such a depth as to prevent their vegetating until the beginning of autumn, or until 258

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Class VII. Late garden.

the season be so far advanced that they may, after being planted, have time to arrive at the required stage of advancement before winter; they are then to be covered with litter, and otherwise treated as the Everlasting Potato.

259 168. **Fairy.**—Stem weak but pretty upright, about two feet high; tuber very small and long; colour smooth and whitish; waxy, medium flavour, and rather delicate. In size and shape similar to the Asparagus, but of a very light pink or reddish colour, and of good quality.

260 169. **German Long.**—Stem rather upright, about two feet high; tuber very long, with many eyes; colour smooth and reddish; waxy, medium flavour, and healthy.

261 170. **Little Nut.**—Stem weak and pretty upright, about one foot and a-quarter high; tuber small and roundish; colour whitish; rather mealy, good flavour, but somewhat delicate.

262 171. **Long White Pine-Apple.**—Stem bushy, about one foot and a-half high; tuber small, oblong, with numerous deep eyes; colour smooth and white; waxy, medium flavour, and healthy.

263 172. **Moyes's Early Prolific.**—Raised from seed by Mr. Moyes in 1834; it is of superior quality, and seems, judging from two years' experiments, to be a very healthy and free grower.

264 173. **Red Pine-Apple.**—Stem bushy, about two feet high; tuber small, oblong, with numerous deep eyes; colour smooth and deep red; waxy, medium flavour, and healthy. This and the Asparagus and Fairy varieties are remarkable for their numerous, large, deep, and regularly-placed eyes, which give them a somewhat curious appearance after being cooked, and their skin carefully taken off.

265 174. **Short Pine-Apple.**—Stem bushy, about one foot and a-half high; tuber small, roundish, with many deep eyes; colour smooth and white; waxy, medium flavour, and healthy.

266 175. **Wild Snake Rooted.**—Stem weak and straggling; tubers seldom more than from two to three ounces in weight, very much elongated and crooked; the

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full length frequently measuring more than five or six times the average diameter. This curious variety, which we received from South America, has nothing to recommend it but the singularity of its form.

2° SOLANUM STOLONIFERUM. (*Schlechtd*).

CREEPING STEMMED POTATO.

This potato was discovered on the mountains of Mexico, and introduced to Europe by the French botanical travellers, Messrs Schiedo and Deppea, who were at first of opinion that in it they had found the true origin of the cultivated potato; but a closer examination has led botanists to consider it a distinct species, to which the name here given has been applied, as being descriptive of the habit of growth in its surface as well as underground stems, the latter of which have been found, in light rich soils, to extend in one season as far as three or four feet around the parent plant, producing an immense number of very small tubers, a characteristic which has induced certain French cultivators to undertake experiments, with a view to procure improved varieties from seed, which it produces in abundance. There appears little doubt that the desired object might be attained by judicious selection and crossing with proper varieties of the more common species, *S. tuberosum*.

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Convolvulus.

Sweet potato.

II. CONVOLVULUS.*

Belonging to Class Exogens, or Dicotyledons; Solanal Alliance of Lindley; Natural Order, Convolvulaceæ; Linn. Cl. 5, Ord. 1.

CONVOLVULUS BATATAS.

SWEET POTATO.

Gerarde's description.

TO the quaint old botanist, Gerarde, we must turn for our description of this species. He says, "This plant, which is called *Sisarum Perunianum*, or Skyrrists of Peru, is generally of us called Potatus, or Potatoes. There is not any that hath written of this plant, or said any thing of the flowers, therefore I refer the description thereof unto those that shall hereafter have further knowledge of the same; yet have I had in my garden divers roots that have flourished unto the first approach of winter, and have grown unto a great length of branches, but they brought not forth any flowers at all. The roots are many, thick, and knobbie, like unto the roots of peionies, or rather of the asphodill, joined together at the top into one head, in manner of the skyrrit, which being divided into divers parts, and planted, do make great increase, especially if the greatest rootes be cut into divers gobbets, and planted in good fertill ground. The potatoes grow in India, Barbarie, Spaine, and other hotte regions, of which I planted divers rootes (that I bought at the Exchange in London) in my garden, where they flourished until winter, at which time they perished and rotted. The potatoe-rootes are among the Spaniards, Italians, and many other nations, common and ordinary meate; which no doubt, are of mightie nourishing parts, and do strengthen and comfort nature; whose nutriment is, as it were, a meane betweene flesh and fruit, though somewhat windie; but being roasted in the embers, they do lose much of their windiness, especially being eaten sopped in wine. Of

* From the Latin *convolvere*, to entwine or wind about, in reference to the habit of the plants.

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SWEET POTATO.

Gerarde's description.

these rootes may be made conserves no less toothsome, wholesome, and daintie; than of the flesh of quinces. And likewise these comfortable and delicate meates' called in shops *Morselli Placentulæ*, and divers other such like. These rootes may serve as a ground or foundation whereon the cunning confectioner or sugar-baker may worke and frame many comfortable, delicate conserves and restorative sweet-meates. They are used to be eaten roasted in the ashes; some, when they be so roasted, infuse them and sop them in wine: and others, to give them the greater grace in eating, do boil them with prunes, and so eate them. And likewise, others dress them (being first roasted) with oile, vinegar, and salt, every man according to his own taste and liking; notwithstanding, however they be dressed, they comfort nourish, and strengthen the body."

Noticed by Peter Cicca.

Peter Cicca, in his "Chronicle" (chap xi. p. 49), printed in 1553, tells us (according to Phillips), "that the inhabitants of Quito and its vicinity have, besides maize, a tuberous root which they eat and call Papas. C. Clusius guesses this to be the root he received from Flanders in 1598, during his residence at Vienna. It was sent to him by the Governor of Mons, in Hainault, who procured it the year before from the attendants of the Pope's legate, under the name of Taratoufli. In Italy, where it was then in use, no one knew whether it originally came from Spain or from America; but as the Spaniards were at that period sole possessors of South America, there can be little doubt but that they procured it from the mountainous parts of that country, and particularly in the neighbourhood of Quito, and from thence sent it to Spain. It is said to have been first introduced into this country, by Sir Francis Drake, who brought it from the South Seas; others give the credit to Sir John Hawkins."

Its introduction into Britain.

There can be little doubt of the Batatas having been cultivated in this country before our common potato, as several writers concur in naming the year 1596 as that of their introduction. The *Convolvulus Batatas* (*Batatas edulis* of G. Don) is a perennial, has a long and round stem, creeping on the ground, putting out bundles of thick tubers or roots at the joints, of an oblong shape, and tapering to both ends.

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The sweet potato is cultivated extensively in all tropical climates. In Europe its culture in the open air is confined to the southern countries, as Spain, South of France, and Italy; but in Britain it can be grown without the aid of artificial heat. We have raised the three following varieties in our Experimental Grounds:

268 **1. Large White Sweet.**—Weight of tubers from six to fourteen ounces.

269 **2. Red Skin Sweet.**—Weight of tubers from three to ten ounces.

270 **3. Yellow Skin Sweet.**—Weight of tubers from three to eight ounces.

The estimation in which the common potato is held in this country will, however, prevent the culture of the sweet potato as an article of food; indeed it is rarely grown except as an article of garden curiosity.

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HELIAN-THUS.

Jerusalem Artichoke.

III. HELIANTHUS.*

Belonging to Class Exogens, or Dicotyledons; Campanal Alliance of Lindley; Natural Order, Asteraceæ; Linn. Cl. 19, *Ord.* 2.

HELIANTHUS TUBEROSUS.

English—JERUSALEM ARTICHOKE. | *French*—TOPINAMBOUR.

"Let the artichoke
Be planted, which to Bacchus, when he drinks,
Is grateful; not to Phœbus when he sings."—COLUMELLA.

Origin of the name.

THIS plant, which was introduced to this country in 1617, must not be confounded with the common artichoke (*Cynara Scolymus*), of which the heads are eaten. Indeed it is somewhat difficult to determine the reason that led to the adoption of the name—for no two plants present a greater dissimilarity of appearance. An ingenious writer states that the name was given in consequence of the tubers somewhat resembling in taste the bottom of the head of the common artichoke; but it is pretty evident that we know nothing about it. If we might hazard a conjecture as to the adoption of the name, it would be, that it was simply a corruption of some more appropriate term; for its specific name having already been transformed from *girasol* into *Jerusalem*, we must not be led to place too much reliance on the purity of the generic term. From the prefix "Jerusalem," the reader may have probably imagined that the plant comes from that celebrated city of the East, whereas it turns out to be a corruption of the word *girasol*, the Italian name of sunflower.

The Jerusalem artichoke is a native of Brazil, perennial, and cultivated solely

* From *helios*, the sun, and *anthos*, a flower, on account of the brilliant colour of the flowers, and from the erroneous idea that the flowers always turn towards the sun.

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Jerusalem Artichoke.

for its roots, which, when properly cooked, form a wholesome and palatable dish. It has a stem which grows to the height of six feet. It seldom or never produces its flowers, which are yellow, in this country, except the tubers be carefully removed when they begin to form. The Jerusalem artichoke is, in fact, a tuberous-rooted sunflower.

This plant is certainly deserving of greater attention, as it is easily cultivated, is extremely hardy, and may be cooked in various ways.

We have only two varieties in cultivation; but there is little doubt that, by care and attention, many superior kinds might be produced.

271 **1. Common Jerusalem Artichoke.**—Before the introduction of the potato into this country, this variety was held in much esteem, as it is even yet in some parts of the Continent. Fowls, and particularly pheasants, are remarkably fond of the tubers, as are also swine, cattle, hares, rabbits, &c. These are produced in considerable quantities; and as they are not liable to be injured by slight frosts, their limited cultivation, instead of potatoes for feeding these kinds of live stock, might be extended.

272 **2. Yellow Jerusalem Artichoke.**—The tubers of this variety are of a yellowish colour, and generally smaller and more irregularly shaped than the common sort; they are also said to be superior in quality, and of a more agreeable taste when cooked.

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IV. OXALIS. (*Linn.*)*

OXALIS. Wood Sorrel.

Belonging to Class Exogens or Dicotyledons; Geranial Alliance of Lindley; Natural Order, Oxalidaceæ; Linn. Cl. 10, *Ord.* 4.

Generic characters.

PLANTS of this genus contain a valuable vegetable acid in their stems and leaves, which is sold under the name of Essential Salt of Lemons, but is seldom to be had genuine, for which *Oxalis crenata*, from the great bulk of its juicy leaves and stems, might be profitably grown. The acid is obtained by expressing the juice, which is then put through a fine cloth to free it from dregs, and, when properly evaporated, and set in a cool place, a crystalline acid salt is formed.

1° OXALIS CRENATA.

1. Tuberous Rooted Wood-Sorrel.—First introduced in 1829 by the late Mr. David Douglas, botanical collector to the London Horticultural Society, from Peru, where it is cultivated for its tubers, which are used in the same way as potatoes, and also for its tender juicy stalks and foliage, which are intensely acid, make an agreeable preserve, and are used as salad. In this country it seems to thrive best when planted two or three feet apart on dry light medium fertile soils, in warm situations. Its tubers do not begin to form until towards the end of autumn; they are of a yellowish colour when cooked, very mealy, and in taste somewhat like the common potato, but insipid, and, on the whole, scarcely worthy of cultivation. 273

2° OXALIS TETRAPHYLLA.

2. Four-Leaved Wood-Sorrel.—A native of Mexico, introduced in 1823; 274

* From *oxys*, acid, the leaves of the genus having an acid taste.

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Oxalis.
Wood Sorrel.

quite hardy. Both the bulbs and roots are eaten when cooked, the leaves are also used in salad, as those of the last.

3° OXALIS DEPPEI.

275

3. **Deppe's Wood-Sorrel.**—Also a native of Mexico, introduced in 1827. The roots, which are as large as small parsnips, are quite free from acidity, and abound in a matter analogous to that of salep. They are gradually becoming esteemed for culinary purposes.

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V. CYPERUS. *(Linn.)*

CYPERUS. Eatable-rooted Sedge.

Belonging to Class Endogens, or Monocotyledons; Glumal Alliance of Lindley; Natural Order, Cyperaceæ; Linn. Cl. 3, *Ord.* 1.

CYPERUS ESCULENTUS.

English—EATABLE-ROOTED SEDGE. | *French*—SOUCHET COMESTIBLE.

" Beneath a willow long forsook,
The fisher seeks his 'customed nook;
And bursting through the crackling sedge
That crowns the current's caverned edge,
He startles from the bordering wood
The bashful wild-duck's early brood."—WARTON.

276

THIS plant is a native of the south of Europe, and was introduced in 1597. The roots are tuberous, about the size of peas. In its native country it is extensively cultivated for its tubers, which are eaten either raw or boiled; in the former state they somewhat resemble filberts in taste, but are rather more sweet and heating. They are easily grown on rich light soils, which should be kept rather moist.

* Supposed to be derived from Cypris, a name of Venus.

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LATHYRUS.
Eatable rooted pea.

VI. LATHYRUS. (*Linn.*)

Belonging to Class Exogens. or Dicotyledons; Rosal Alliance of Lindley; Natural Order, Fabaceæ, Linn. Cl. 17, Ord. 4.

LATHYRUS TUBEROSUS.

TUBEROUS OR EATABLE ROOTED PEA

277 NATIVE of Holland, introduced in 1596. It has spreading roots, with numerous irregularly-shaped blackish coloured tubers attached, which tubers are sold in the Dutch markets, and when cooked are highly esteemed, being in taste somewhat resembling roasted sweet chestnuts.

END OF THIRD DIVISION.

* From *la*, augmentative, and *thouros*, anything exciting, in allusion to the medicinal qualities of the roots.

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DIVISION IV.

PLANTS CULTIVATED FOR THEIR USES IN THE ARTS AND MANUFACTURES.

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SECT. I.—PLANTS YIELDING FIBRE.

I. LINUM*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Geranial Alliance of Lindley; Nat. Ord. Linaceæ; Linn. Cl. 5, Ord. 5.

1° LINUM USITATISSIMUM.

English—Flax.
Scottish—Lint.
French—Lin.
Italian—Lino.
Spanish—Lino.
Portuguese—Linhaco.
German—Flachs.
Dutch—Vlasch.
Swedish—Lin.
Danish—Hör.
Russian—Len.

"Now pluck up thy flax for thy maidens to spin,
First see it dried, and timely got in."—Tusser.

1

AN annual plant, a reputed native of Britain, but generally supposed to be the offspring of cultivation. Of this species there are several varieties, distinguished by slightly different but permanent characteristics, while there are others distinguished by the names of the countries from which they are imported, as Riga Flax, Russian, Dutch, &c.; and although these may have at first an apparent difference in appearance when growing, and in the quality of their produce, yet they become completely assimilated, by being cultivated for a few years under the same circumstances, and are then known under the general name of "Common Flax."

* From the Celtic *llin*, a thread.

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Flax is almost the only plant at present cultivated in Britain for its fibre; it has not, however, for some time been grown to near the same extent as formerly. The soils best adapted for flax are those of a light nature, and such as contain a considerable portion of decayed vegetable matter in their composition; and in all cases, the land, previous to sowing, which may be done from the middle of March to near the end of April, should be as free as possible from root and annual weeds, and in a high state of pulverisation. It has been recommended (and in some instances practised with success) to sow grass seeds with the flax crop, pulling the latter when in flower, the ground being rolled immediately afterwards to prevent the young grass suffering from drought. By this practice the soil is not so much exhausted as by a ripe crop of any kind, particularly corn, and the grass plants have more time to acquire strength in autumn.

Flax seed imported from Riga is generally preferred to that of home growth; quantity per acre not less than 2½ bushels when grown principally for its fibre, for, when the crop is too thin, it becomes rather coarse and inferior. The usual method of preparing flax is to cause it to undergo a species of rapid decomposition, by steeping it in water, and afterwards bleaching it on grass or stubble, in order to facilitate the operation of separating the fibre from the woody part of the stem; but late experiments tend to prove that such treatment materially affects the strength and durability of the fibre; and that, by the aid of new discoveries and recently invented machinery, the work can be done in a more satisfactory and economical manner. The most valuable of these discoveries, in the preparation of the fibre, is unquestionably that of the Chevalier Claussen, which, as its merits become known, must give a considerable impetus to flax cultivation. In the first place, "it will enable the farmer, by mechanical means and with little trouble and expense, to reduce the bulk of his flax crop, so as to give him access to markets and render it marketable. It will enable him at the same time to preserve, to be returned to the land, those portions of the crop which tend to exhaust the soil; the produce being a description of fibre adapted to the coarser kinds of the flax manufacture. Secondly, by the boil-

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ing operation, the long, troublesome, and noxious process of steeping may be dispensed with in the preparation of the flax for the finer purposes, for which long fibre is spun in the ordinary way. Lastly, by reducing the flax to short fibre, and by splitting it up by means of a chemical process, a great extension of the demand for flax may be expected, to be spun on cotton, wool, and silk machinery, alone, or in combination with any of those substances." To explain the nature of the process, we shall quote from Professor Edward Forbes*:—"The stem of the flax plant consists of, 1st, the wood, or 'shove'; 2nd, the pure fibre; 3rd, the gum, resin, or glutinous matter, which causes the fibres to adhere together. In preparing the plant for any purposes of fine manufacture, it is necessary to separate the pure fibre from the woody part and glutinous substance. In the ordinary process, this is done by means of the fermentation produced in the tedious and noxious operation of steeping in stagnant pools and 'retting,' by which putrid products and noxious exhalations are diffused over the neighbourhood, and by which a loss is incurred of those parts of the plant which, if returned to the soil, would cause it to be anything but an exhausting crop. Schenck's patent process accelerates the operation, and removes some of the objections to steeping, by using hot instead of cold water: Claussen's process consists of three stages. In the first, the straw is passed through the rollers of a hand machine, by which the greater portion of the woody fibre is removed. The flax, so prepared, is reported by the Royal Flax Society to be well adapted for the manufacture of sail-cloth, canvas, nets, bags, and other coarse articles. The flax, when reduced in bulk to one-fourth, may be prepared for spinning in the ordinary way, into finer fabrics, by the steeping process, either in hot or cold water; and the farmer, having thus brought his crop into a marketable state, may dispose of it to establishments where steeping is carried on for the purposes of those manufactures, for which that process is still deemed an essential preparation. He will have retained, moreover, to be returned to the soil, the woody matter, the seeds, and the husks of the capsules, which by the ordinary steeping process are lost. These are the exhausting portions of the crop,

* Hunt's Hand Book, Vol. i. p. 162.

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which, with the glutinous matter, contain the substances derived from the soil, the fibre being composed almost exclusively of materials derived from the atmosphere, carbon, oxygen, and hydrogen, with about two per cent. of mineral substances."

The next stage of the Claussen process is directed to the effectual removal of the glutinous matter. The wood may be removed by mechanical means; but the glutinous portion will only yield to chemical processes. The fermentation induced in steeping is a chemical process, but it only partially removes the gum or resin, a large per-centage of which is insoluble in water. M. Claussen, therefore, has recourse to boiling, for about three hours, either in the state in which it comes from the field, or in a partially cleaned condition, in water containing about one-half per cent. of caustic soda. After undergoing this process, the flax is placed in water, slightly acidulated with sulphuric acid, 1 part of acid to 500 of water. A complete separation of the fibres is thus effected. They may then be used, either for spinning, as long fibre, into linen, or may be submitted to the third stage of the Claussen process, by which they are coverted into short fibre, or flax cotton. In the former case, the flax only requires to be dried and scutched in the ordinary way.

The principle of the process for the production of short or cotton fibre, consists in the destruction of the cylindrical or tubular structure of the fibre, by means of carbonic or other acid, the action of which splits it up into a number of filaments, the upper and under surfaces of which are segments of circles, and the sides of which are ragged and serrated like the fibres of cotton. To effect this object, the flax, either before or after the process of boiling for the severance of the fibres, is cut into short lengths by a machine, and saturated in a solution of sesquicarbonate of soda (common soda) a sufficient time to allow of the liquid entering completely every part of the small fibres. It is then immersed in a solution of dilute sulphuric acid, 1 of acid to 200 of water. By the action of the acid on the carbonate of soda, carbonic acid is liberated, the expansive powers of which split the tubes into thin filaments. "Means shewn in their result to be so powerful, and in their operation so gentle, yet decisive, give to the simple experiment, made in the presence of

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the Council by Professor Way, more the air of a new instance of natural magic than the sober reality of an ordinary operation of natural laws, of which the application only was novel; and its effects on the meeting, accordingly, were both singular and striking, occasioning evident marks of their agreeable surprise, and admiration of the results obtained. The flax fibre, soaked in the solution of subcarbonate of soda, was no sooner immersed in the vessel containing acidulated water, than its character became at once changed from that of a damp rigid aggregation of flax to a light expansive mass of cottony texture, increasing in size like leavening dough, or an expanding sponge. The change was no less striking when this converted mass, in its turn, was placed in the next vessel which contained hycloride of magnesia, and became at once bleached, attaining then the colour as it had just before received the texture of cotton." *

The most distinct varieties of the common flax are the following:—

1. **L. usitatissimum altissimum** (*Tallest variety of Common Flax*).—This variety possesses a marked superiority over all the others in length, and also in the comparative slenderness of its stalks. 2

2. **L. usitatissimum capsula ovata** (*Oval-headed variety of Common Flax*).—This is distinguished by its short and somewhat rigid habit of growth, and, above all, by the oval pointed-like shape of its capsules. 3

3. **L. usitatissimum flore-albo** (*White-flowered variety of Common Flax*).—This variety is distinguished by its white flowers from those of the three preceding, which are blue; its habit of growth is similar to that of the species, and its fibre is said to be finer and whiter. 4

2° LINUM PERENNE.

PERENNIAL FLAX.

The stems of this species are numerous, branching and spreading towards 5

* From Mr. Hudson's Report of some Experiments performed by Professor Way, before the Royal Agricultural Society, illustrative of the Chevalier Claussen's process.

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their extremities; flowers large and of a blue colour; root perennial. Grows naturally in the south of England on light chalky soils. The culture of this species has been often tried and recommended, but was never carried to a great extent. It yields a strong and rather coarse fibre, which is difficult to separate from the woody part of the stem. Two seasons are required from the period of sowing before a crop can be obtained; but, under favourable circumstances, the plants will last for a great length of time; its culture, however, cannot be recommended, except on light inferior chalky soils, such as it naturally grows upon.

Several other, and indeed all the species of the genus *Linum*, yield fibre in greater or less quantities; but none of them are equal in value for that purpose to the species described.

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II. CANNABIS*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Urtical Alliance of Lindley; Nat. Ord. Cannabinaceæ; Linn. Cl. 22, Ord. 5.

CANNABIS SATIVUS.

English—HEMP. | *Italian*—CANAPE. | *Spanish*—CANAMO.
French—CHANVRE. | *Russian*—KONAPLI. | *Arabic*—GANEH.
German—HANF.

"Good flax and good hemp, for to have of her owne,
In May a good huswife will see it be sown."—TUSSER.

The Common Hemp is an annual plant, generally supposed to be a native of the East Indies; but when first introduced into this country is uncertain. 6

From being a native of a warm climate, it is far too tender ever to be cultivated as a field crop in Scotland. It is, however, capable of being grown in the warmer and more sheltered districts, but not to the extent to render it an object of commercial importance. In the southern parts of England it is cultivated to a considerable extent. The soils best adapted for the growth of Hemp are those of a rich damp alluvial nature. The usual method of sowing is broadcast, and the quantity of seed required per acre is from two to three bushels at the least; the fibre, as in the case of flax, being finer when sown thick. The operation of sowing should never be gone into before the season is so far advanced as to prevent any chance of the young plants being injured by frost. When the crop is intended entirely for fibre, the plants are all pulled promiscuously when in flower; but when the seed is considered an object of importance, those which produce only male flowers are pulled when their leaves begin to assume a yellowish hue, and the others are allowed to stand till the seed ripens. The plants are afterwards tied in bundles, watered, bleached, &c., as in the case of flax.

* From the Celtic *can*, reed, and *ab*, small. Paxton derives it also from its Arabic name *ganeh*,

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III. HUMULUS*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Urtical Alliance of Lindley; Nat. Ord. Cannabinaceæ; Linn. Cl. 22, Ord. 5.

HUMULUS LUPULUS.

English—Hop. | *Italian*—Lupolo. | *Dutch*—Hoppe.
French—Houblon. | *Spanish*—Oblon. | *Russian*—Chmel.
German—Hopfen.

"Lo, on auxiliary poles, the hops
Ascending spiral ranged in meet array."—Phillips.

7 The stems of the Hop are herbaceous, twining on poles or other plants for support, to the height of from ten to twenty feet; perennial; native of England, where it grows in hedges, thickets, and waste places. Although the Hop is never cultivated for its fibre alone, yet, as it may be obtained from it in considerable quantities, it is certainly entitled to a place in this Division. The fibre of the Hop is so difficult to separate from the woody part, that the stems require to be soaked in water, under ordinary circumstances, all winter, until they are so far decomposed as to admit of the fibre being separated. In Sweden, where its manufacture to any extent has almost exclusively been confined, it is made into a strong and durable white cloth.

* From *humus*, the ground, in allusion to the habit of the plant, which, if not supported, trails along the ground.

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IV. URTICA.* (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Urtical Alliance of Lindley; Nat. Ord. Urticaceæ; Linn. Cl. 21, *Ord.* 4.

1° URTICA DIOICA.

COMMON *or* GREAT STINGING NETTLE.

"Where plots full of nettles be noisom to eie,
Sow thereupon hemp-seed, and nettles will die."—TUSSER.

The leaves of this well-known plant are thickly studded on their surface with small stinging hair-like bristles; roots creeping, perennial. Grows naturally in all countries of Europe, and most parts of Asia. The Common Nettle has been long known as affording a large proportion of fibre, which has not only been made into ropes and cordage, but also into sewing thread and beautiful white linen-like cloth of very superior quality. It does not, however, appear that its cultivation for that purpose has ever been fairly attempted. The fibre is easily separated from other parts of the stalk without their undergoing the processes of watering and bleaching; although by such the labour necessary for that purpose is considerably lessened. Like those of many other common plants, the superior merits of this generally accounted troublesome weed have hitherto been much overlooked. 8

2° URTICA CANNABINA.

HEMP NETTLE.

The leaves of this species are smoothish; the stems about three feet in height. Native of Siberia; introduced in 1749. 9

In the countries of which they are natives, the inhabitants make cordage

* From *uro*, to burn, in reference to the stinging qualities of most of the species.

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and cloth from the fibre of this and the following species; but it is questionable how far their cultivation should be recommended in this country until the result of further experience is known.

3° URTICA CANADENSIS.

CANADIAN NETTLE.

10 The leaves of this species are somewhat hairy; stems two to three feet in height; perennial. Native of North America; introduced in 1646.

Most others of this genus yield strong tough fibre, and some of the taller growing sorts might be found superior to any of the preceding.

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V. PHORMIUM*. (*Thunberg.*)

Belonging to Class Endogens or Monocotyledons; Lilial Alliance of Lindley; Nat. Ord. Liliaceæ; Linn. Cl. 6, *Ord.* 1.

PHORMIUM TENAX.

11

The flowers of this species are of a light greenish colour, on a strong branching stalk, but are seldom produced in this country; leaves long, tapering, pointed, and equitant, or diverging alternately to two sides, and overlapping each other towards their base; evergreen; perennial. Introduced from New Zealand in 1788.

The leaves of this plant, which in this country grow to the length of three or four feet, afford the fibre imported to a considerable extent from the South Sea Islands under the name of New Zealand Flax, and which, from its strength and durability, is eminently fitted for making ropes and cordage. The plants withstand the rigour of winter in this country without the slightest protection, and hence their more extensive culture has been recommended; but the results of late experiments (especially in the south of Ireland) tend to shew, that, although the plants grow very well, yet their produce is inferior to that imported from the South Seas, and that its cultivation in any part of Britain is not likely to prove a profitable speculation.

* From *phormos*, a basket, from the use made of the plant in its native country.

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VI. ASCLEPIAS*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Solanal Alliance of Lindley; Nat. Ord. Asclepiadaceæ; Linn. Cl. 5, Ord. 2.

ASCLEPIAS SYRIACA.

SYRIAN *or* VIRGINIAN SWALLOW-WORT, VIRGINIAN SILK, &c.

12 Stems herbaceous, upright, and unbranched, from four to six feet in length; leaves oval, thick, and downy on the under side; flowers of a dull reddish or purple colour; pods long and nearly upright when ripe, having a rough leathery-like skin, which opens at one side, when the thin membranous-edged seeds are seen to be thickly covered and enveloped in a large quantity of white down, resembling cotton; roots creeping, perennial. Native of North America; introduced in 1629.

In addition to the cottony or downy substance contained in the pods of the Syria Swallow-worts, and which is very useful for stuffing pillows, cushions, &c., as well as for making into thread and cloth, its stalks yield a large supply of fibre of superior quality, the use of which in the manufacture of thread, ropes, fishing-nets, and cloth, is well known and appreciated by the inhabitants of some parts of North America, and its culture in Europe has been much recommended; but, with the exception of some experiments in France, the results of which have been very satisfactory, it has not yet been grown to any extent from which a satisfactory conclusion can be deduced regarding its merits.

The Syria Swallow-wort is found to accommodate itself to a great variety of soils, but thrives best on those of a rather moist nature, of medium texture, and which possess a medium degree of fertility. It may be propagated

* The Greek name of the Esculapias of the Latins.

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by transplanting the roots, or sowing its seeds in rows about two feet apart, to admit of keeping the ground sufficiently clear for the first two years; the third season after sowing it arrives at full maturity, and the interstices will then become completely filled up, from the creeping nature of its roots. The time which a crop will remain in vigour is uncertain, but it may be depended on for a considerable number of years. The flowers are highly fragrant, particularly in the evenings and mornings, and, gathered in the latter, while the dew is upon them, the Americans make a sugar from them; and in spring the young shoots form an excellent substitute for asparagus.

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VII. APOCYNUM.* (*Tourn.*)

Belonging to Class Exogens or Dicotyledons; Geranial Alliance of Lindley; Nat. Ord. Apocynaceæ; Linn. Cl. 5, Ord. 1.

APOCYNUM CANNABINUM.

CANADIAN HEMP, *or* HEMP DOG'S-BANE.

13 Stems herbaceous, not branched, upright, about four or five feet in height; leaves oblong, downy beneath; flowers whitish-green, in lateral cymes, which are longer than the leaves; roots creeping, perennial. Native of North America; introduced in 1699.

The native Indians of North America use fibre prepared from the stalks of this plant, for making twine, bags, fishing-nets, and linen-like cloth for their own use; but in this country it has been hitherto entirely confined to Botanical collections. From the results of experiments conducted at Paris by Professor Thouin, it appears that the fibre of this, as well as that obtained from the stalks of *Asclepias syriaca*, is considerably stronger than Common Hemp.

* From *apo*, away, and *kyon*, a dog, from its being supposed fatal if eaten by that animal.

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ALTHÆA*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Malval Alliance of Lindley; Nat. Ord. Malvaceæ; Linn. Cl. 16, *Ord.* 8.

ALTHÆA CANNABINA.

HEMP MARSH-MALLOW.

14

Stem rising to about six feet in height, and branching; leaves downy or hoary beneath; roots long, thick, branching, and mucilaginous; perennial. Native of Austria; introduced into Britain in 1595.

By submitting the stalks of this plant to a process similar to that employed in the preparation of hemp, it has been found to yield a coarse but very strong fibre, which is extremely well suited for making cordage, and coarse cloth for bags, ships' sails, &c.

Other plants of this genus have been found to produce fibre of considerable strength, as the *A. narbonensis* (Narbonne Marsh-Mallow), *A. officinalis* (Common Marsh-Mallow), *A. rosea* (the Hollyhock), &c.; but further experience is yet requisite, both in the preparation and application of the fibre which they yield, before it be ascertained whether or not they may be cultivated advantageously for that article alone.

* From *altheo*, to cure, from the healing qualities of some of the species.

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IX. LAVATERA*. (*Tourn.*)

Belonging to Class Exogens or Dicotyledons; Malval Alliance of Lindley; Nat. Ord. Malvaceæ; Linn. Cl. 16, *Ord.* 8.

LAVATERA ARBOREA.

COMMON TREE MALLOW.

15 Stems upright, strong, and branching; leaves downy; foot-stalks of the flowers small; generally termed a biennial, but, when not injured by very severe frosts, or broken down by wind, will last for several years. Grows naturally on sea rocks or cliffs, as on the Bass Rock in the Firth of Forth.

The results of experiments conducted in France by M. Cavanilles tend to shew that the Tree Mallow is capable of producing a very strong fibre, which may be employed for making ropes, &c.; and his statements have been confirmed by further experiments conducted at Toulon. It seems, therefore, not improbable that its cultivation on the sea-coast, where the soil will produce little else, might be attended with profitable results in this country, particularly as it is very hardy, and grows naturally in such situations.

There are many more plants capable of yielding fibre, but which are seldom cultivated for that purpose alone, and are therefore more justly referred to other Divisions; of these may be mentioned *Cytisus scoparium* (Common Broom, Div. II. page 103); as also the *C. multiflorum* (White Portugal Broom), and *C. monospermum* (One-seeded Broom); also the *Ammophila arundinacea* (Sea-side Reed Grass, Div. II. page 47), and several species of *Tilia* (Lime Tree, Div. VI.), which are more especially grown for their timber; and a considerable number more than is included in this section, belonging to the natural order *Malvaceæ;* but although the fibre which they yield be of good quality, yet its quantity is too small to compensate for their cultivation.

* Named in honour of the botanist's friends, the two Lavaters.

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SECT. II.—PLANTS YIELDING OIL.

OLIFEROUS Plants are cultivated either for their *Fixed* or *Volatile* Oils, the former of which are obtained from the seeds by expression, and the latter from the stems, leaves, flowers, or seeds, by distillation.

PLANTS FROM WHICH FIXED OILS ARE OBTAINED.

I. BRASSICA*. (*Tourn.*)

Belonging to Class Exogens or Dicotyledons; Cistal Alliance of Lindley; Nat. Ord. Brassicaceæ; Linn. Cl. 15, Ord. 2.

1° BRASSICA CAMPESTRIS OLEIFERA.

SUMMER RAPE, WILD NAVEW, COLSAT *or* COLZA.

For the specific characters of this plant reference is made to Div. II. page 109. 16

This and the Winter Rape, *B. napus* (Div. II. page 110), are the only sorts cultivated to any considerable extent in Britain for the manufacture of oil; and growers generally agree that the former of these is to be preferred, from its yielding a greater quantity of seed, in the proportion of 955 to 700. The seeds of *B. præcox* and *B. rapa* (Div. II. pages 110, 111), are also occasionally used in the manufacture of oil; but these are not equal in their bulk of produce to the Summer and Winter sorts above mentioned.

* From the Celtic *bresic*, signifying a cabbage.

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The Rape, when grown for its ripe seeds, has a much more exhausting effect on the soil than when eaten off or removed in a green state, and should therefore be considered as, and to occupy the place of, a white or corn crop. The common sorts may be sown from the end of May to the middle, or, in early situations, the end of August; the *B. campestris* may be sown latest. The seed should always be sown in rows, and the same method of after-culture adopted as when intended for a green crop until the following season, in which it is cut when fully ripe, or about the month of June. It is afterwards allowed to lie until its natural moisture is evaporated, when it is generally threshed out in the field, the facility with which its seeds are dispersed rendering carting to the barn unadvisable. The average produce in clean seed may, under favourable circumstances, be computed at from forty to fifty bushels per acre. In some parts of the Continent, where an oil-mill is considered as a necessary appendage to the farm, the seed is conveyed thither, and bruised immediately after being threshed; but in England it is generally dried, by being spread thinly on a granary floor, and kept till required. The refuse, after the oil has been extracted, affords the valuable manure known by the name of Rape Cake or Rape Dust.

Oil of Rape, or, as it is commonly termed, Sweet or Green Oil, is chiefly employed for oiling machinery, and also by druggists, &c. It is seldom or never used for burning, as it gives out rather a dull light, and more smoke than some others.

Rape Cake, and also Rape Dust, form excellent manure for clover and grass lands, turnips, &c., applied broad-cast, either along with the seed or as a top-dressing for grass lands, in the quantity of from ten to fourteen cwt. per acre, or in drills along with turnip seed, in the proportion of from four to six cwt. per acre. The application of Rape Dust as a manure is attended with the most beneficial results on rather stiff or heavy soils; it readily attracts moisture, and becomes decomposed.

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2° BRASSICA ELONGA.

HUNGARIAN RAPE.

17

The cultivation of this Rape has been chiefly confined to its native country, Hungary. Compared with the summer and winter sorts, it produces a smaller bulk of leaves, consequently is less adapted for feeding cattle, but yields a much larger quantity of seeds, for which it is exclusively cultivated.

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II. SINAPIS*. (*Tourn.*)

Belonging to Class Exogens or Dicotyledons; Cistal Alliance of Lindley; Nat. Ord. Brassicaceæ; Linn. Cl. 15, *Ord.* 2.

1° SINAPIS NIGRA.

English—Mustard.	*Spanish*—Mostaza.	*Arabic*—Khirdal.
French—Moutarde.	*Portuguese*—Mostarda.	*Persian*—Sirshuff.
German—Mustert, Senf.	*Russian*—Gortschiza.	*Hindostanee*—Rai.
Dutch—Mostaard.	*Swedish*—Senap.	
Italian—Mostarda.	*Danish*—Sennep.	

18 The seeds of this plant are of a dark brown or blackish colour; annual; grows naturally in corn-fields.

This and the two following species are more generally cultivated for their seeds, which are ground, and so form what is known by the name of Flour of Mustard, than for the manufacture of oil; but as they are also occasionally employed for the latter purpose in common with those of the Rape, they are here introduced. For further particulars see Sect. V. of the present Division.

Mustard may be sown any time from the beginning of March to the end of May, but the best season is about the beginning of April; and the quantity of seed required for broad-cast sowing, which is the only system practised, is from one-third to one-half peck to the acre. The usual time of reaping is about the end of July or beginning of August, and from thirty to forty bushels per acre may be considered an average crop. It is found to succeed best on a rather rich loamy soil, which should, previously to sowing, be reduced to a fine tilth, as the seeds, if buried to the depth of about three inches, will lie in a dormant state and retain their powers of vegetation for

* From the Celtic *nap*, a designation applied to all plants resembling the cabbage or turnip.

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ages; from which circumstance, together with the liability of the seed to become shaken out in the harvesting of the crop, such lands as are once employed for the growing of mustard cannot be fairly cleaned of it for a considerable length of time, and only by judicious fallowing or fallow-cropping, with repeated hoeing and weeding.

2° SINAPIS ALBA.

WHITE MUSTARD.

Seed yellowish-white; annual; grows in corn-fields; but rare in Scotland in a truly wild state. 19

This takes a longer period to ripen than the last species, and is therefore generally sown a week or fortnight earlier. It requires a similar soil, and the same quantity of seed per acre as that of the last. Its seeds are also frequently employed in the manufacture both of Oil and of Flour of Mustard.

3° SINAPIS ARVENSIS.

CORN MUSTARD *or* CHARLOCK.

Seed smooth and many-angled; leaves rough; stems also rough; annual; common in corn-fields. 20

The Charlock is never cultivated for its seeds; but as it is often very abundant in corn-fields, these are generally separated in preparing the corn for market and sold for crushing, along with those of the Rape and others.

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III. RAPHANUS*. (*Tourn.*)

Belonging to Class Exogens or Dicotyledons; Cistal Alliance of Lindley; Nat. Ord. Brassicaceæ; Linn. Cl. 15, *Ord.* 2.

1° RAPHANUS SATIVUS.

COMMON RADISH.

21 Leaves rough; flowers whitish or tinged with purple; root fusiform, annual. Native of China; introduced in 1548.

There are several varieties of *R. sativus;* but that which is more particularly adapted for the making of oil is distinguished by the name of *R. sativus olifer*, or Oil-Radish. Its stems are dwarf (from one-half to two feet in height), very much branched, spreading, and producing more seed-pods than the other. It is grown rather extensively in China for its oil, from whence it has been introduced and cultivated in some parts of the Continent, but it does not appear with any particular success, although a good deal has been said and written in its favour. It seems best suited for the southern countries, where it may be sown in September and reaped in May; but in the north of France and in Britain it is too tender to withstand the winter, and therefore requires to be sown in spring; on account of which circumstance it is not likely ever to supersede the Rape in these places; compared with which its oil, although rather superior in quality, is more difficult to extract.

2° RAPHANUS RAPHANISTRUM.

WILD RADISH *or* JOINTED PODDED CHARLOCK.

22 Leaves, together with the stems, interspersed, but not thickly, with rigid bristles or hairs, and of a glaucous-like green colour; pods smooth, one-

* From *ra*, quickly, and *phainomai*, to appear, in allusion to the speedy germination of the seeds.

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celled, jointed, and three to eight seeded; flowers light yellow; annual. Common in corn-fields.

Being a common and troublesome weed, this species is never cultivated for its seeds, but these are disposed of and used in the same manner as those of the Common Charlock, see p. 23 of this Division.

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IV. CAMELINA*. (*Crantz.*)

Belonging to Class Exogens or Dicotyledons; Cistal Alliance of Lindley; Nat. Ord. Brassicaceæ; Linn. Cl. 15, *Ord.* 1.

CAMELINA SATIVA or MYAGRUM SATIVUM.

GOLD OF PLEASURE.

23 Pods wedge or pear shaped, scarcely half so long as their footstalks; flowers yellow. Native of Britain, but not common in a truly wild state, being generally introduced along with flax or by other artificial means.

The Gold of Pleasure produces a finer oil for burning than the Rape or Mustard, having a brighter flame, less smoke, and scarcely any smell. It succeeds better than any of the other oil plants on light, shallow, dry soils, and arrives so soon at maturity that in the south of Europe it produces two crops in a season. In several of the more northerly districts of the Continent, as the north of France, Germany, and Holland, although it will not produce two crops in the season, it is found very useful for sowing in June or beginning of July when other crops may have failed; and when sown in the early part of the season, it may be removed in time to be succeeded by turnips, grass seeds, &c. Besides the use of its seeds for oil, the stems yield a coarse fibre for making sacks, sail-cloth, &c.; and being small, hard, and durable, they are used for thatching temporary erections, and also for making coarse packing paper.

A superior variety has lately been introduced into France under the name of *Le Cameline majeur*, which differs from the common in being of stronger growth and producing more seed-pods, which contain a greater number of larger and more oily seeds.

The field culture of *Camelina sativa* has not hitherto been attempted in

* From *chamai*, on the ground, and *linon*, flax, in allusion to its dwarf habit.

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Britain; but there is no doubt of its succeeding perfectly well in this climate were its cultivation deemed expedient. One circumstance deserving of attention is, that it is never found to be at all injured by insects, as the cabbage plant louse (*Aphis brassica*), which occasionally proves very hurtful to the Rape and other plants of the same Order when they are coming into flower.

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V. HESPERIS*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Cistal Alliance of Lindley; Nat. Ord. Brassicaceæ; Linn. Cl. 15, *Ord.* 2.

HESPERIS MATRONALIS.

COMMON ROCKET *or* DAME'S VIOLET.

24 Flowers of a whitish pink or purple-like colour; pod long, erect, smooth, and very slightly swollen at the seeds; leaves slightly rough or hairy; roots thick and branching; biennial. Native country doubtful. It is cultivated in some parts of France for its oil, which resembles that of the *Camelina sativa*. It requires a rather rich soil, and may be sown in May or June, and will produce a full crop of seed in July or August of the season following, after which it should be ploughed up; for although many of the plants do not perish after flowering (therefore not truly biennial), yet they are so much weakened as to be unfit for producing anything like a full crop in the next season.

Others of the Natural Order *Brassicaceæ* have been grown for their oleaginous seeds, such as *Eruca sativa* (Cabbage Rocket), *Lepidum sativum* (Garden Cress), &c.; but although crushing for oil be a very profitable and convenient method for disposing of a superabundant stock of these seeds, yet the produce which is obtained per acre is so small, compared with that of Rape, that they are not deserving of culture for their use in the manufacture of oil only.

* From *hesperos*, the evening, the flowers of most of the species being more fragrant as night advances.

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VI. LINUM*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Geranial Alliance of Lindley; Nat. Ord. Linaceæ; Lin. Cl. 5, Ord. 5.

LINUM USITATISSIMUM.

COMMON FLAX *or* LINT.

When the Common Flax is cultivated for its seeds, it requires to be sown thinner, and to remain longer on the ground, than when grown exclusively for its fibre; the crop not being pulled until the seed-capsules begin to acquire a brown or ripe-like colour, and these are then detached, by the points of the stalks being drawn through what is generally termed a rippling comb; the capsules are then spread in a dry airy place, and occasionally turned, until completely dry, when the seeds are threshed out and cleaned for the manufacturer. 25

The Oil of Lintseed is used by painters, &c. Oil-cake and Oil-dust are formed of the refuse of Lintseed after the oil has been expressed, and are extensively used for feeding cattle, particularly young calves.

For the generic and specific characters of this plant, see Sect. I. of this Division.

* From the Celtic *lin*, a thread.

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VII. CANNABIS*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Urtical Alliance of Lindley; Nat. Ord. Cannabinaceæ; Linn. Cl. 22, Ord. 5.

CANNABIS SATIVUS.

26 An oil is obtained from the seeds of the Hemp, which, like that from the Flax, is used by painters, and also, in some parts of the Continent particularly Russia, in cookery.

For further particulars concerning this plant, see Sect. I. of this Division.

* From the Celtic *can*, reed, and *ab*, small. Paxton derives it also from its Arabic name *ganeh*.

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VIII. PAPAVER*. (*Tourn.*)

Belonging to Class Exogens or Dicotyledons; Ranal Alliance of Lindley; Nat. Ord. Papaveraceæ; Linn. Cl. 13, *Ord.* 1.

PAPAVER SOMNIFERUM.

CULTIVATED GARDEN POPPY *or* MAW.

27

Stems, leaves, and capsules, all smooth; leaves clasping the stem, and cut or gashed; annual; height of the stems about three or four feet. Grows naturally in England and various parts of the Continent.

The soils best suited for the growth of the Poppy are such as are of medium texture, and in the highest state of fertilization. As the seeds are small, and consequently easily buried, the land should, previous to sowing, which should be done in March or April, be well pulverized by harrowing and rolling; the seed is then to be sown in drills, about an inch in depth, and about twenty inches or two feet distant one from the other; the young plants are afterwards thinned out to from six to ten inches distance in the rows, and the whole crop kept free from weeds by hoeing, &c. The period of reaping is about the month of August, when the earliest and generally the largest capsules begin to open; the plants are then cut or pulled, and tied in small bundles, taking care not to allow the heads to recline until they be carried to some convenient place allotted for the reception of the seed, which is then shaken out, and the sheaves again set upon their end, to admit of the remaining capsules becoming ripe. In Germany and Flanders, a mode of obtaining the first crop is to spread sheets along by the side of the row, into which the seeds are shaken by bending over the tops of the plants; these are then pulled, tied in bundles, and removed, when the sheets are drawn forward to the next row, &c.

* From *papa*, pap, or thick milk, the expressed juice having this appearance.

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The Oil of the Poppy is of an agreeable flavour, and on the Continent chiefly applied to domestic uses, for which it is reckoned nearly equal to that of the Olive. Its consumption in this country is comparatively trifling, being chiefly used for the finer sorts of oil-painting and by druggists.

The varieties of *P. somniferum* are very numerous, but that which is most esteemed for its oil is known by the name of—

28 **1. Papaver somniferum olifer** (*Oil* or *Grey Poppy*).—Distinguished by the dull reddish or grey-like colour of its flowers, the great size and oblong shape of its capsules, and by the large quantity of brownish-coloured seeds which these contain. This variety is chiefly cultivated in Italy, the south of France, Germany, and Flanders.—*Le Pavot Œillette grise* of the French.

29 **2. Papaver somniferum album** *vel* **candidum** (*White Poppy*).—Although this variety be more esteemed for the production of opium, yet it is also occasionally grown exclusively for its oil. It differs from all the other varieties in having white flowers, very large globular-shaped capsules or heads, and white seeds. Several other of the varieties are occasionally employed for the same purposes, and, indeed, any of the single-flowered sorts may be grown for their seeds, but those with double and semi-double flowers should always be excluded, as they produce less seed.—*Le Pavot Blanc* of the French.

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IX. HELIANTHUS*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Campanal Alliance of Lindley; Nat. Ord. Asteraceæ; Linn. Cl. 19, *Ord.* 2.

The seeds of the Sunflower yield an oil little inferior to that of the Olive for domestic purposes, and which is also well adapted for burning. In Portugal the seeds are made into bread, and also into a kind of meal; and in America they are roasted, and used as a substitute for coffee; but the purpose for which they seem best adapted is the feeding of domestic fowls, pheasants, and other game. The greatest objection to their culture is, that they require very superior soil, and are a most impoverishing crop, particularly the taller growing sort, *H. annuus;* from which circumstance the dwarf species, *H. indicus*, has been preferred by some cultivators, who assert that, as its dwarf habit of growth admits of a greater number of plants being grown on a given space, it is not so much inferior to the other in quantity of produce as from its appearance one would be led to suppose. In addition to the uses above enumerated, the leaves, either in a green or dried state, form excellent food for cows, and are greedily eaten by them; the stems also form good fuel, and yield a considerable quantity of potash.

1° HELIANTHUS ANNUUS.

COMMON SUNFLOWER.

Leaves rough; flowers yellow; heads large and nodding; stalks thick, from four to six feet in height; annual. Native of South America; introduced in 1569. 30

* From *helios*, the sun, and *anthos*, a flower, on account of the brilliant colour and arrangement of the petals, and from the popular fallacy that the flowers always followed the sun in its course.

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2° HELIANTHUS INDICUS.

DWARF SUNFLOWER.

31 This species, which was first introduced from Egypt in 1785, differs from the last principally in being of a much dwarfer habit of growth, and less branched; its flowers are generally of a lighter yellow colour; and it is smaller in all its parts.

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X. MADIA*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Campanal Alliance of Lindley; Nat. Ord. Asteraceæ; Linn. Cl. 19, *Ord.* 2.

MADIA SATIVA.

CULTIVATED *or* OIL-SEEDED MADIA.

33

Plant upright, with numerous diverging branches, and, together with the leaves and involucre, covered with very viscid glandulous hair or down; leaves lanceolate, entire, and more or less stem-clasping; flowers inconspicuous, yellow, and much crowded at and near the extremities of the branches; annual; grows from one and a half to two feet high. Native of South America.

In its native country the Madia has long been cultivated for its oleaginous seeds, the produce of which is deemed by many even superior to that of the Olive or Poppy. In Europe its culture was first attempted in 1835, by M. Bosch, royal gardener at Stutgard; since which period it has been greatly extended, and with the utmost success. "From its valuable property of enduring winter and spring frosts, the Madia may either be sown in autumn or spring, the ground being previously well pulverized. Four pounds of seed will suffice for sowing an acre in drills, and about six pounds for the same space broad-cast. The young plants should be thinned out so as to stand at least four or five inches apart. The crop should be reaped when the earliest seeds acquire a grey colour, and disposed in handfuls to facilitate drying; after which, it should be immediately threshed out, as, if stacked in the haulm, the viscid matter which adheres to the foliage would cause fermentation. The seeds should afterwards be washed in warm water, to clean them of the same viscid or glutinous and strong smelling substance. Chemical analysis shews

* From *Madi*, the name of the original species in Chili.

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that 100 parts of Madia oil contain 45 of *olein* (fluid fat), 40 of *stearin* (margarine or solid fat), and 15 of *glycerine*, a sweetish glutinous substance."

A quantity of Madia sown in our Experimental Grounds, in May, ripened seeds in August following. A portion of the seeds which were sown immediately after harvesting, produced plants two to three inches in height in the course of the autumn, many of which perished in January; but the remainder, although weak in spring, recovered sufficiently to produce a good crop of ripe seeds about the middle of July. Upon the whole, there seems every probability, that, in ordinarily favourable seasons, the *Madia sativa* may be grown very successfully in Scotland.

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XI. EUPHORBIA*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Euphorbial Alliance of Lindley; Nat. Ord. Euphorbiaceæ; Linn. Cl. 11, *Ord.* 3.

EUPHORBIA LATHYRUS.

CAPER SPURGE.

32

Stem four to five feet in height; annual or biennial. Native of England. It receives the name of Caper Spurge from its seeds resembling those of the true Caper.

From the results of experiments made by M. Schubler, the seeds of the Caper Spurge yield about thirty per cent. of their actual weight of oil (being a larger proportion of oil than is yielded by any of the commonly cultivated oliferous plants), which he found to produce a very bright flame in burning, and likely to prove as useful as that of rape for machinery, &c. Judging, however, from the qualities of the castor-oil plant and others belonging to the same Natural Order, it is not likely to be at all suitable for food, but may be found available in medicine. At all events, as it is quite hardy, and produces an abundance of seed, it seems well deserving of being made the subject of further experiment.

There are several other herbaceous plants cultivated for their fixed oils, but they are all too tender for the climate of Britain.

Fixed oils are also obtained from the seeds of numerous species of trees, which, with the exception of the *Juglans regia* (Common Walnut), *Amygdalus communis* (Almond), *Corylus avellana* (Common Hazel), *Fagus sylvatica* (Common Beech), and a few others of minor importance, can only be grown in tropical climates or the warmer parts of the temperate zones. Of

* Named by Linnæus after Euphorbus, a physician to Juba, king of Mauritania.

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these may be mentioned, *Cocas nucifera* (Cocoa-nut tree), *Areca catechu* (Areca or Betal-nut or Cabbage tree), *Phœnix dactylifera* (Date Palm), and numerous others of the Palm tribe; also *Hameltonia olifera* (Oil Nut), *Bertholatia excelsa* (Brazil Nut), and the *Olea europœa* (Olive Tree); which last is cultivated to a very great extent in Spain, Italy, and other places in the south of Europe; and from its fruit the Olive Oil, so extensively used in some countries for food, but in this chiefly for domestic purposes and in medicine, is procured.

Of the hardy trees producing oleaginous seeds, the Walnut is peculiarly distinguished for the fine quality of the oil which it yields, and which is preferred even to that of the Olive for domestic purposes; but in Britain it can only be grown advantageously in the southern districts; for, although it generally ripens its seeds in the northern counties, yet they seldom attain to that state of full maturity which would warrant the supposition of their yielding oil equal in quality to that of such as are grown in warmer latitudes. The same remarks are applicable in the case of the Almond. And with regard to the Beech and the Hazel, the former is to be considered as being more particularly cultivated for its timber, and the latter for its timber and as a dessert fruit.

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PLANTS FROM WHICH VOLATILE OILS ARE OBTAINED.

The plants included in this sub-division are distinguished by their possessing a fragrant smell, with a peculiar pungency and warmness of taste, the existence of which is supposed to depend on the presence of their essential oils. They are seldom the objects of very extensive culture; and the following are a few of the most useful, which are suited to the climate of this country.

XII. MENTHA*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Echial Alliance of Lindley; Nat. Ord. Lamiaceæ; Linn. Cl. 21, *Ord.* 1.

1° MENTHA PIPERITA.

PEPPERMINT.

Leaves smoothish; flowers light purple; roots creeping, perennial. Native of England. 34

Besides the essential oil of peppermint, it also yields a spirit and a simple water. It is much used in medicine, and by confectioners. It grows best upon a rather rich light moist soil, and cultivators recommend renewing the plantations every three or four years, otherwise the oil becomes perceptibly impaired in flavour. Like others of the genus, when grown for its essential oil, the plants should be cut when in flower, and carefully prevented from getting rain during the time they are drying, else the produce becomes not only inferior in quality, but the quantity is materially lessened.

* The poets celebrate Minthe, a daughter of Cocytus, as being turned into mint by Proserpine in a fit of jealousy.

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2° MENTHA VIRIDIS.

SPEARMINT.

35 Leaves smoothish; flowers light purple; roots creeping, perennial; grows naturally in marshy places.

The essential oil, and other preparations from the Spearmint, are more confined to medicinal purposes than those of the Peppermint. Its green leaves and tops are used for flavouring in cookery; and an infusion of the leaves serves considerably to retard the coagulation of milk.

Although the Peppermint and Spearmint are the two species chiefly grown for their essential oils, yet similar productions may be obtained from others of the genus, particularly *M. pulegium* (Pennyroyal), *M. odorata* (Bergamot Mint), *M. crispa* (Curled-leaved Mint), &c.

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XIII. LAVANDULA*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Echial Alliance of Lindley; Nat. Ord. Lamiaceæ; Linn. Cl. 14, *Ord.* 1.

LAVANDULA SPICA.

COMMON LAVENDER.

36

Leaves without foot-stalks, and rolled back at their edges; flowers blue; grows to the height of from four to six feet. Native of the south of Europe; introduced about the year 1568.

The Lavender will grow very well on a great variety of soils, but thrives best on such as are rather rich, light, and dry. It forms very ornamental dwarf-hedges, where shelter more than strength is required; and if proper attention be paid to the season and manner of clipping them, this seems the most economical mode of growing the flowers, as they are much more easily collected from hedge-rows than from bushes allowed to grow at random.

The Oil of Lavender is obtained in the proportion of 1 oz. to 60 oz. of dried flowers; but this plant is more esteemed for the distilled water which bears its name, and which, together with the oil, is obtained in the greatest proportion from the dried flower-spikes that have been gathered in very dry weather, and just before the flowers are fully expanded.

Many other plants belonging to the Natural Order *Labiatæ* might be particularised and included amongst such as yield essential oils; but as these are only cultivated to a comparatively limited extent, the mere enumeration of the better known sorts may be sufficient; they are as follows:—*Rosmarinus officinalis* (Rosemary), *Thymus vulgaris* (Common Thyme), and others of the same genus; *Origanum vulgaris* (Common Marjoram), *Marrubium vulgare*

* From *lavo*, to wash, in allusion to the use made of the distilled waters.

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(Common Horehound), *Melissa officinalis* (Common Balm), *Hyssopus officinalis* (Common Hyssop), &c.

Several of the Natural Family *Apiaceæ* also yield volatile oils, and some produce both these and fixed oils; but their cultivation for oil alone is generally a secondary object, and most of them belong more properly to Section V. intitled "Plants cultivated for various Economical Purposes," which see. These are principally *Carum Carui* (Common Caraway), *Coriandrum sativum* (Coriander), *Cuminum Cyminum* (Cummin), *Ligusticum levisticum* (Lovage), *Pimpinella anisum* (Anise), *Anethum fœniculum* (Fennel), and *A. graveolens* (Dill).

Of plants yielding essential oil, and which are not included in either of the above, may be mentioned the Rose family, particularly *Rosa centifolia* (Hundred-leaved Rose), *R. damascena* (Damask Rose), which are most reputed for yielding the atar or essential oil of roses; it is obtained from their dried petals, an ounce of atar being only procured from about 100 oz. of these. From the *Solidago odora* (Sweet-smelling Golden Rod), is also obtained a very fragrant volatile oil. Also the whole of the Fir tribe, from most of which may be extracted the essential oil of turpentine, and which are noticed more particularly in Div. V. "Plants cultivated for their Timber."

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SECT. III.—PLANTS CULTIVATED FOR THEIR COLOURING MATTER OR DYE.

ALTHOUGH the hardy plants, or such as grow freely in the climate of Britain, from which colouring matter may be obtained, are very numerous, yet those actually cultivated in this country are not only few, but the extent of their cultivation is very limited, arising no doubt from the facility with which vegetable dyes can be imported from countries still more favourable for their production. Therefore, in the following enumeration of dye plants, such only are described as are most likely to be grown with advantage in this climate.

I. ISATIS*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Cistal Alliance of Lindley; Nat. Ord. Brassicaceæ; Linn. Cl. 15, *Ord.* 2.

ISATIS TINCTORIA.

DYERS' WOAD *or* GLASTUM†.

Root-leaves about a foot in length, on pretty long footstalks; those of the stem about three inches long and half an inch broad; stems upright and much branched, about three feet in height; flowers of a bright yellow colour; root thick, branching and fibrous, biennial. Native of Britain, but by no means common in a truly wild state. 37

* From *isaeo*, to make equal, the plant being believed by its simple application to destroy all roughness of the skin.

† This plant was formerly called *glastum*, from the Celtic *glas*, blue, whence Glastonbury derived its name. The antient Britons coloured themselves with the blue preparation obtained from this plant, whence they received their appellation, *Britho* being the Celtic word for, to paint. The Picts were so called by the Romans for the same reason.—*Loudon's Encyclopædia of Plants.*

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The blue dye produced by the Woad is obtained from the root-leaves, and as its quality as well as quantity depends much on the size to which these are grown, it is only advisable to cultivate this plant on very rich soils, of medium texture, and to manure the same well before sowing the seeds, which is done either in rows or broad-cast (the former system is preferable), in the beginning of August. In the season following, four or five crops of leaves may be obtained, the last of which, however, are inferior to the first, and, therefore, always kept separate. The plants afterwards are to be ploughed up, except intended for seed, which they will produce the season following. An acre of good land will, in favourable seasons, yield from a ton to a ton and a half of leaves. In some districts, the young leaves of the first season's growth are eaten down by sheep; but this practice is supposed to weaken the plants and to lessen the produce of the next. When the seed is to be saved, only three cuttings are generally taken. The common practice of procuring the dye of the Woad is to reduce the leaves, immediately after being cut, by bruising to a smooth paste, which is laid in heaps pressed close and smooth, taking care to fill up any cracks that may appear in the blackish crust which forms on the surface. After lying for fifteen days the heaps are opened, the crust reduced to a powder and mixed through the mass, which is then formed into balls and dried in the sun. Good balls are distinguished by their being weighty, of a rather agreeable smell, and, when rubbed, of a violet colour within. Before being used by the dyer, these balls undergo a further preparation by being reduced to a gross powder, which is thrown up into heaps to the height of three or four feet, moistened with water, and allowed to ferment, until it emits a thick fetid fume; it is then turned regularly and again moistened every day for a fortnight; after which it is stirred less frequently, and ultimately thrown up into a heap till used. When used it first imparts to wool a green colour, which changes to a blue by being dried in the air.

Woad was formerly cultivated to a pretty considerable extent in Scotland, but the cheapness and consequent general use of Indigo has almost entirely superseded it.

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II. RESEDA*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Cistal Alliance of Lindley; Nat. Ord. Resedaceæ; Linn. Cl. 11, *Ord.* 3.

RESEDA LUTEOLA.

DYER'S WEED, WELD, WOLD, *or* UPRIGHT WILD MIGNONETTE.

38

Stems three to five feet in height, upright, generally producing several branches near the top, which are also upright; flowers in long, terminal, greenish-yellow coloured spikes; biennial. Grows naturally on dry waste places, and more especially amongst the rubbish of quarries and coal pits.

The *R. luteola* was formerly extensively, and is still partially, cultivated in some parts of Britain for the yellow colouring matter which it yields. Contrary to the Woad, this plant yields the best dye when not grown to a very large size. It should, therefore, be sown pretty thick on dry light soils. The usual practice is to sow the seeds in spring along with a corn crop; the plants not running to seed until the following season. These are pulled when in flower, or before the seed is fully ripe, and used either in a green or dry state. Nothing further is necessary for making the dye than to put the plants into a linen bag, and boil them in water; into which the wool, silk, or other stuff to be dyed is afterwards immersed. The dye of this plant is of little permanency, unless fixed by some mordant; for which four ounces of alum and from one to two ounces of tartar to one pound of wool is generally previously employed. The common practice is to allow four to six pounds of the dried plant to each pound of wool or cloth to be dyed.

* From *resedo*, to calm or appease; the application of the plant being considered useful in external bruises.

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III. RUBIA*. (*Tourn.*)

Belonging to Class Exogens or Dicotyledons; Cinchonal Alliance of Lindley; Nat. Ord. Galiaceæ; Linn. Cl. 4, Ord. 1.

RUBIA TINCTORIA.

DYERS' MADDER.

39 Stems three to four feet in length, trailing or climbing; leaves six together, smooth above with rough edges; flowers minute and of a yellowish-green colour; root thick, branching, three to four feet in length, and striking deep into the ground; perennial. Native of the south of Europe.

The roots of the Madder yield the well-known red or scarlet dye, distinguished by the same name, and extensively used by calico printers and dyers generally. About the end of the seventeenth century, the sum paid by the British to the Dutch was upwards of 60,000*l.* annually, the dye being at that time worth about 6*l.* per cwt. The price became so much increased afterwards, that several spirited individuals attempted its culture in England, amongst whom may be mentioned Mr. Miller, who published a pamphlet and also a paper in his Gardener's Dictionary on its culture. The results of these experiments tend to prove that the climate of Britain, particularly England, is eminently fitted for the growth of this plant, and that it can be raised equal, if not superior, to the best roots which are annually imported from Holland; but as in times of peace these can be imported from thence, and other continental countries, at a cheaper rate than it can be grown by the British farmer, its cultivation in this country has been almost if not entirely abandoned.

Madder may be propagated by seeds, but the usual practice is by dividing

* From *ruber*, red, in allusion to the colour of the roots.

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the small roots which grow near the surface, and planting them in rows, two and a half or three feet apart, on rich deep soil of medium texture, the interstices during the first season being each occupied by a row of cabbages, kidney beans, &c. The whole is carefully kept free from weeds, and the young plants covered over with three or four inches of earth in the beginning of November; sometimes the crop is taken at the end of the second season, but more frequently the third season after planting; the roots, after being lifted, are carried direct to the kiln for drying them, and they are afterwards ground for use. The finest Madder, however, which is obtained from the Levant, is said to owe its peculiar excellence to the roots being dried in the sun.

In the neighbourhood of some of the extensive dyeing establishments about Glasgow, considerable advantages have been derived from using the refuse of the Madder roots for top-dressing grass lands. Madder imparts a red colour to the milk and bones of such animals as feed on its shoots.

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IV. GALIUM*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Cinchonal Alliance of Lindley; Nat. Ord. Galiaceæ; Linn. Cl. 4, *Ord.* 1.

GALIUM VERUM.

COMMON YELLOW-FLOWERED BEDSTRAW *or* CHEESE RENNET.

40

Stems smooth, slender, and reclining; leaves eight together, smooth, and dark green; flowers bright yellow, in long loose terminal spikes; roots long and spreading. Grows abundantly in dry light pastures.

The flowering tops of this well-known plant, boiled in alum, dye a bright yellow colour, and its roots yield a red nearly equal to that of Madder; as a substitute for which its cultivation was attempted in England, at the recommendation of the Committee of Council for Trade, and found to yield about 12½ cwt. of dried roots per acre. *G. verum* obtains the name of Cheese Rennet from being used for curdling milk; and the bruised plant is sometimes put into milk intended for cheese, to give it a flavour and colour.

The roots of others of the same genus, particularly *G. mollugo* (Great Hedge Bedstraw), *G. sylvaticum* (Wood Bedstraw), and *G. boreale* (Cross-leaved Bedstraw), possess the same qualities as those of *G. verum*, but in a less degree; and the whole genus, like the Madder, possess the peculiarity of colouring the bones and milk of animals feeding on them.

* From *gala*, milk, the flowers of one of the varieties being used for curdling milk.

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V. ASPERULA*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Cinchonal Alliance of Lindley; Nat. Ord. Galiaceæ; Linn. Cl. 4, Ord. 1.

ASPERULA TINCTORIA.

DYER'S WOODROOF.

41

Stems reclining, about one foot in length; flowers whitish; perennial. Native of the South of Europe; introduced in 1766.

The roots of this plant are used in some parts, particularly Dalmatia, instead of Madder, for dyeing wool and cloth of a reddish colour; but in bulk the crop obtained from it is inferior to that of the Madder.

* A diminutive of *asper*, rough, in allusion to the leaves.

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VI. CARTHAMUS*. (*Tourn.*)

Belonging to Class Exogens or Dicotyledons; Campanal Alliance of Lindley; Nat. Ord. Asteraceæ; Linn. Cl. 19, *Ord.* 1.

CARTHAMUS TINCTORIUS.

DYER'S SAFFLOWER *or* BASTARD SAFFRON.

42 Stems about three to four feet high, branching towards the top, quite smooth, and when full grown hard or woody; leaves ovate, slightly spiny; flowers dark orange or of a vermilion colour; seed ovate, about one-fifth of an inch in length by one in breadth, whitish or very light brown, and smooth on the top; annual. Native of Egypt; introduced into Britain in 1551.

The colouring matter of Safflower is obtained exclusively from the flowers of the plants, which are collected when fully expanded, and dried on a kiln, under pressure, to form them into small round cakes, in which state they are sold in the shops. The *C. tinctorius* is extensively cultivated at present in the Levant, and several countries of Europe, particularly France, Spain, and Germany; in the latter of which the first gathering of flowers is obtained in the beginning of September, and the other crops for six or eight weeks following, as the flowers expand. It flowers about the same time in this country, and seems sufficiently well suited to the climate. It grows best on rich soils of medium texture, and should be sown about the beginning of April in rows two feet apart, the plants afterwards being thinned out to the distance of six inches in the row.

Although the colour of the flowers is of a deep orange, they are used for dyeing various shades of red, the yellow matter being easily separated from the other. The flowers of the Carthamus are employed in Spain and other countries for colouring dishes and confectionaries; and from the seed a fixed

* From its Arabic name *quortom*, to paint, the flowers yielding a fine colour.

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oil is obtained somewhat similar to that of the Sunflower; for which purpose alone it does not, however, seem deserving of cultivation, at least in this climate.

Many other plants belonging to the same Order are capable of producing dyes, particularly those having yellow flowers, the colour of most of which is easily extracted, and indelibly imparted to other substances. The following are a few of such as have proved the objects of most successful experiment:—

Scolymus hispanicus (Spanish Golden Thistle) yields a saffron-like colour, and is often employed for adulterating the true colour of that name; *Serratula tinctoria* (Dyer's Saw-wort), the whole plant of which yields a yellow colour; as does that of *Hieracium umbellatum* (Narrow-leaved Hawkweed), *Bidens tripartita* (Trifid Bidens), and *Anthemis tinctoria* (Ox-eye or Dyer's Chamomile). From the florets of *Coreopsis verticillata* and *C. tinctoria*, both natives of North America, the inhabitants extract a reddish dye; and the leaves of *Senecio jacobæa* (Common Ragwort) have been employed in this country for dyeing wools and cloth green.

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VII. CROCUS*. (*Tourn.*)

Belonging to Class Endogens or Monocotyledons; Narcissal Alliance of Lindley; Nat. Ord. Iridaceæ; Linn. Cl. 3, *Ord.* 1.

CROCUS SATIVUS.

SAFFRON CROCUS.

43 Flower large, and of a deep purple or violet colour, appearing in the months of September and October; naturalized in some parts of England, but supposed to have been first introduced in the time of Edward III.

The only parts of *C. sativus*, which yield the colouring matter known by the name of *saffron*, are the trifid stigma and that part of the style above the orifice of the long funnel or tube. It was first cultivated at Saffron Walden, in Essex, which place derives its name from this circumstance, and where, in the beginning of the seventeenth century, as well as in Cambridgeshire, Suffolk, and Herefordshire, it was grown very extensively; but at present its cultivation, except as an ornamental flower, is not attended to in Britain, the present supplies being received from the south of France and other parts of the Continent. The bulbs are planted in June, on rather rich soil of medium texture, in rows six inches apart across the ridges, and three inches from bulb to bulb; and the first crop of flowers is gathered in the months of September and October following as they expand, when the stigma, together with those parts of the style yielding the dye, are picked out and dried on a kiln between layers of paper or linen cloth, under a slight pressure, whereby the mass is formed into loose cakes. The average produce per acre of dried Saffron is computed at about five pounds for the first season, and twenty-four pounds the next two, of which the greatest quantity is generally produced in

* A Chaldean name applied by Theophrastus.

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the last or third year, after which the roots are taken up and the plantations renewed.

From the small quantity of Saffron obtained from an acre of good ground, together with the great labour and attention requisite in cultivating and collecting it, and the consequent high price at which it sells, a strong inducement is held out to the growers and dealers to adulterate it with other articles similar in colour and form; for which purpose the petals of the Bastard Saffron (*Carthamus tinctorius*, p. 50), and those of the Spanish Golden Thistle (*Scolymus hispanicus*), are used. The presence of these is, however, easily detected by a previous knowledge of their form and size; to make them attain which when dried it is only necessary to immerse them in warm water. The petals of these two are also much lighter in colour; but this circumstance alone is not a sufficient test for detecting their presence, since their colour is easily altered by the application of some other dye.

Others of the genus *Crocus* very much resemble the autumn or saffron; but it does not appear that they are also capable of yielding dye of equal quality; or at least, if they really possess such merits, they have hitherto been overlooked. Of the most common of these, *C. vernus* (Large Purple-flowered Spring Crocus), and *C. versicolor* (Parti-coloured Spring Crocus), bear the greatest affinity to *C. sativus;* but the difference in the period of flowering is alone sufficient to distinguish them.

Other hardy herbaceous plants which may be used by dyers, but are considered of less importance than those previously described, are as follows:—*Stachys sylvaticus* (Wood Hedge Nettle), *Polygonum persicarium* (Spotted Asmart or Bistort), *Lysimachia vulgaris* (Common Loosestrife), *Scabiosa succisa* (Devil's Bit), *Xanthium strumarium* (Small Burdock), *Agrimonia eupatoria* (Common Agrimony), and *Anthyllis vulneraria* (Kidney Vetch, see Div. II. page 85); from the stems and leaves of all of which a yellow colour may be extracted; as also from the flowers of *Hypericum perfoliatum* (Perfoliated St. John's Wort), the roots of *Thalictrum flavum* (Meadow Rue), and *Urtica dioica* (Common Nettle, page 11). A very bright yellow colour was

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also extracted from the flower or anthers of the potato by that eminent patron of Agriculture, the late Sir John Sinclair, Bart., which was found eminently suited for the dyeing of shawls and woollen cloth.

Besides the Madder and others of the same Natural Order formerly mentioned, from the roots of which a *red* dye is obtained, the following may be added:—*Rumex acetosa* (Sorrel), *Comarum palustre* (Marsh Cinquefoil), *Tormentilla erecta* (Upright Tormentil), *Beta vulgaris hortensis* (Red-rooted Garden Beet, Div. III. page 24). A red or purplish colour is also obtained from the tops of *Origanum vulgare* (Common Marjorum), and from the ripe berries of *Phytolaca decandria* (Virginian or American Poke-weed).

Woollen stuffs are dyed green by a decoction prepared from the leaves and stems of *Cherophyllum sylvestre* (Cow-weed), the panicles of *Arundo phragmites* (Common Reed, Div. II. page 63), and those of *Bromus secalinus* (Rye-seeded Brome-grass, Div. II. page 55).

A fine blue may be obtained from the flowers of *Delphinium consolidum* (Common Branching Larkspur), and those of *Campanula rotundifolia* (Harebell or Common Round-leaved Bell-flower), also from the berries of *Sambucus ebulus* (Dwarf Elder); and a very dark or almost black colour from the stems and leaves of *Lycopus europæus* (Water Horchound).

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VIII. POLYGONUM*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Silenal Alliance of Lindley; Nat. Ord. Polygonaceæ; Linn. Cl. 8, Ord. 3.

POLYGONUM TINCTORIUM.

DYERS' BUCKWHEAT.

44

Flowers reddish coloured, and disposed in slender spikes; leaves of a light green colour, smooth and shining; annual or biennial. Native of China.

Although this Polygonum was known to British botanists as an inconspicuous exotic so early as 1776, when it was introduced into the Royal Gardens at Kew, by Mr. John Blake, yet authentic information relative to its properties as a dye-yielding plant, was only received at a comparatively recent period, from the missionaries resident in China, where it has been cultivated from time immemorial for its colouring matter, which is deemed equal if not superior to the finest indigo. In Europe, attention was first directed to its growth by M. Delile, professor of Botany in the Jardin du Roi, at Montpellier; who, in 1835, obtained seeds of it from the Baron Fischer, director of the Imperial Gardens at St. Petersburg; and these having increased rapidly under his management, he was, in a year or two, able to distribute them pretty widely. We succeeded in procuring a sufficiency to make trial of its cultivation in our Experimental Grounds; the results of which shewed, that, although the climate was not sufficiently warm for its maturation, as the plants only exhibited the first appearances of flowering just prior to their being destroyed by frost, yet as these had then attained a height of from two and a half to three feet, with numerous side branches, and yielding a considerable weight of foliage per acre, it may probably be cultivated with advantage even in this climate, when the extraction of the dye is better understood. In

* From *poly*, many, and *gonu*, a knee, in reference to the numerous joints of the stem.

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France, its growth and manufacture have been made the subjects of numerous experiments, attended with various results; but it is generally believed that a more intimate knowledge of the proper method of extracting the dye is still requisite to render its cultivation a matter of general importance.

Thunberg, a Swedish botanical traveller, mentions, that, in addition to *Polygonum tinctorium*, the Japanese also extract blue dyes from *P. chinense*, *P. barbatum*, and the common road-side weed, *P. aviculare*.

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IX. RHAMNUS*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Rhamnal Alliance of Lindley; Nat. Ord. Rhamnaceæ; Linn. Cl. 5, Ord. 1.

1° RHAMNUS CATHARTICUS.

COMMON BUCKTHORN.

Stems erect; flowers greenish-coloured; berries four-seeded; grows to the height of from fifteen to twenty feet. Native of England. 45

It is the fruit of this plant which is sold under the name of French Berries. The juice of these, when in an unripe state, has the colour of saffron; when ripe and mixed with alum it forms the sap-green of the painter, and in a very ripe state the berries afford a purple colour. The bark also yields a beautiful yellow dye.

In England the *R. catharticus* is sometimes used for making hedges; but is, from its open and irregular habit of growth, not so well suited for that purpose as the common hawthorn. It grows freely in any soil, and may be propagated by cuttings, layers, or seeds; which should be sown in August, immediately after the ripe berries are gathered; otherwise, if deferred till spring, they will not vegetate until the following season.

2° RHAMNUS FRANGULA.

ALDER BUCKTHORN.

Leaves about two inches in length and one in breadth; flowers whitish; berries globular, two-seeded, and black when ripe. Grows naturally, and is very abundant in woods and thickets in some parts of Britain. 46

The berries of this species are often substituted for those of the last, but

* From the Celtic *rum*, signifying a tuft of branches.

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are easily detected by the difference in the number of seeds which they contain. In a green state they dye wool green and yellow; when ripe, bluish-grey, blue, and green. The bark also dyes yellow, and, with preparations of iron, black.

The propagation and culture of this, as also of most others of the genus, is the same as in the case of the last, viz. by layers, cuttings, or seeds sown when the berries are ripe; the plants are afterwards kept in the nursery until sufficiently strong for being planted out.

Both species, being natives of Britain, are most likely to succeed well under cultivation in this country, and, as dye plants, they are the most important in the genus. Several others are also quite hardy, and are employed in the same manner, viz. *R. saxatilis* (Rock Buckthorn), the berries of which are used to dye morocco leather yellow, and which, in common with those of *R. clusii* (Narrow-leaved Buckthorn), are sold under the name of Avignon Berries; these, however, are more frequently obtained from the *R. infectoria* (Yellow-berried Buckthorn). The wood of *R. erythroxylon* in a ground state yields the bright red colour known to dyers under the name of Red-wood. It is a native of Siberia, and grows freely in this climate.

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X. RHUS*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Rutal Alliance of Lindley; Nat. Ord. Anacardiaceæ; Linn. Cl. 5, Ord. 3.

RHUS CORIARIA.

COMMON, SUMACH.

47

Leaves composed of seven or eight pairs of leaflets, terminated by an odd one, rough above, and downy beneath; flowers whitish-green, in large compound, terminal clusters. Native of the south of Europe; grows to the height of ten or fifteen feet.

The Sumach of the dyers is the young shoots of the *R. coriaria*, reduced to a coarse powder by a mill. When used alone it imparts to wool and cloth a fawn-colour, inclining to green; and particularly to cotton stuffs, previously impregnated with acetate of alumina as a mordant, it imparts a very durable yellow. In Spain and Portugal Sumach is extensively grown, much in the same manner as willows for the basket-makers in this country, the young shoots being cut down yearly, and bruised or ground for use. Being a native of a comparatively much warmer climate, it is questionable what success the cultivation of *R. coriaria* might meet with in Britain. It is, however, quite hardy, and at least deserving of more attention than it has hitherto received.

Several other species of the genus are employed for dyeing, particularly *R. glabra*, the berries of which dye red; and the same, boiled along with the young wood, afford a black ink-like colour. This plant overruns lands laid down to grass in a few years, in some parts of America, as the common whin does in this country. Several are highly poisonous, and indeed this dangerous quality in some measure seems to belong to most of them. They all contain a large portion of tannin, and some are therefore used instead of oak-bark for tanning leather.

* From *rhous*, in Greek, which is from *rhudd*, a Celtic word signifying *red*, in allusion to the colour of the fruit and leaves of some species in autumn.

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XI. QUERCUS*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Quernal Alliance of Lindley; Nat. Ord. Corylaceæ; Linn. Cl. 21, *Ord.* 9.

1° QUERCUS TINCTORIA.

DYERS' QUERCITRON *or* AMERICAN OAK.

48 Native of America. Grows to the height of seventy or eighty feet. The inner bark of this tree, which is one of the tallest growing American oaks, forms the yellowish dye known by the same name. The only preparatory operations it undergoes previous to using, after being separated from the wood and outer bark, is drying and grinding. Although there are specimens of Quercitron growing in collections in this country, no fair attempts have as yet been made to cultivate it for either its bark or wood.

2° QUERCUS INFECTORIA.

DYERS' OAK.

49 Native of the Levant and some other parts of the south of Europe, where it attains the height of from forty to fifty feet.

The *Q. infectoria* is said to have been introduced into Britain in 1822, but it is doubtful whether there are yet any growing plants in this country. Its inner bark is said to produce a brighter yellow colour than that of the last species, for which its culture has been much recommended, it being supposed sufficiently hardy for this climate.

* From the Celtic *quer*, fine, and *cuez*, a tree; others derive it from the Greek word *choiros*, a pig, because those animals feed on the acorns.

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XII. GENISTA*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Rosal Alliance of Lindley; Nat. Ord. Fabaceæ; Linn. Cl. 10, *Ord.* 6.

GENISTA TINCTORIA.

DYER'S BROOM *or* GREENWEED.

From the flowers of this dwarf shrub, a bright yellow colour is obtained, which, for dyeing green with woad, is said to be preferred by dyers to all other yellows. 50

Besides the preceding hardy shrubs and trees, the dyes of which form articles of commerce, there are several others of more common occurrence, from the bark, leaves, and other parts of which colouring matter of good quality has been extracted in considerable quantities; the most common are as follows:—*Prunus domestica* (Common Plum), *Pyrus malus* (Apple), *Carpinus betulus* (Common Hornbeam), *Juglans regia* (Common Walnut), and *Berberis vulgaris* (Common Barberry); from the bark of all of which a yellow colour may be obtained; as well as from the young twigs, bark, and leaves of the following:—*Betula alba* (Common Birch), *Myrica gale* (Scotch Myrtle or Sweet Gale), *Salix pentandria* (Sweet Willow, one of the few willows found to thrive well on marsh peaty soils), and others of the same genus.

The bark of *Fraxinus excelsior* (Common Ash), as also the fruit of *Vaccinium myrtillus* (Blaeberry), and that of *Empetrum nigrum*, yield a blue colour; and from the bark of the *Quercus pedunculata* (Common Oak), a black dye may be obtained.

* From the Celtic *gen*, a small bush.

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XIII. LECANORA*. (*Acharius.*)

Belonging to Class Thallogens; Lichenal Alliance of Lindley; Linn. Cl. 24, Ord. 8.

LECANORA TARTAREA.

CUDBEAR.

51 Crust covered with greyish-white tartar-like granules; fructification scattered; disk a little wrinkled, and of a flesh colour. Found at all seasons growing naturally on rocks, and to about the height of two inches.

The Cudbear is so called from the colouring properties which it possesses, having been first discovered by a gentleman of the name of Cuthbert. It is employed for dyeing a purplish colour, and to a very considerable extent, in some of the establishments of Glasgow. The greatest supply is imported from Norway, but a large quantity was formerly procured from some districts of the Highlands, where the inhabitants made a livelihood by stripping the plants from off the stones by means of iron hooks. Those specimens having the most fructification are reckoned the best.

Several other Lichens are also used in dyeing, but not to near the same extent as the Cudbear, at least in this country. The principal are *Lecanora parella*, which also affords a purple colour, and in the south of Europe is used in lieu of the *L. tartarea;* from *L. candelaria* the Swedes obtain a colour, which they employ for staining candles used in their religious ceremonies; *Rocella tinctoria* (Orchal or Archel), which grows naturally on rocks in the Cape Verd and Canary Islands, and from which the rich purple, but rather fugitive colour, which bears its name, is derived. *Lepraria chlorina, Parmelia saxatilis, Sticta pulmonacea, Solorina crocea, Gyrophora pustulata, G.*

* From *lekane*, a basin, alluding to the form of the shields.

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deusta, Usnea plicata, Alectoria jubata, and others, yield dyes of various kinds.

Several of the *Lycopodineæ*, another Order of *Cryptogamic* plants, are employed instead of alum in some parts for fixing dyes, particularly *Lycopodium selago,* which is used for that purpose in Skye and other of the Western Isles; *L. complanatum* and *L. clavatum* are likewise found to produce the same effect.

Judging from the great variety and beauty of some colours given out by plants of the Order *Algæ* or Sea-weed, several of these might be found to yield valuable dyes; but hitherto it does not seem that any extensively successful experiments have been made with them.

Of the principal plants yielding dyes, peculiar to the tropical and warmer climates, and which are imported from thence to this country, the following list may perhaps be acceptable:—*Indigofera tinctoria, I. argentea, I. anil,* &c. from the first two of which is chiefly procured the East Indian Indigo, and from the last the West Indian Indigo, of commerce; *Hæmatoxylon campechianum* (Log-wood), *Cæsalpina sappan* (Sappan Red-wood), *C. crista, C. brasiliensis, C. echinata,* from all of which the Red Brazil Wood, which is extensively imported into Britain from the West Indies, is obtained; *Maclura tinctoria* (Fustic), *Diospyros ebinaster* (Ebony), *Pterocarpus santilinus* (Red Saunder's Wood), *Bixa orellana,* the seeds of which form the *Arnotta* of the shops, and *Curcuma longa,* the roots of which yield the fine yellow colour, known by the name of Turmeric.

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SECT. IV.—PLANTS CULTIVATED FOR VARIOUS ECONOMICAL PURPOSES.

I. SALSOLA*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Chenopodal Alliance of Lindley; Nat. Ord. Chenopodiaceæ; Linn. Cl. 5, Ord. 2.

SALSOLA KALI.

COMMON *or* PRICKLY SALTWORT.

52 Stems spreading, hairy; leaves somewhat rugged, narrow, and terminating in a sharp bristled point; flowers minute and flesh-coloured; annual. Grows naturally on light sandy soils on the sea coasts.

This is the principal native plant from which the alkaline salts, barilla, soda, potash, and kelp are obtained; it was formerly collected in considerable quantities on the west coast of Britain, and burned for soda for the manufacture of glass, &c.

Many more of the sea-side plants possess the same principles as the above; but those most esteemed and cultivated in Spain and other countries of the south of Europe, of which they are natives, are the *Salsola Soda* (Long Fleshy-leaved Saltwort), and *S. sativa* (Cultivated Saltwort). From these two, which are grown on light sandy soils on the coasts of the Mediterranean, and on those of Spain in particular, is obtained the Spanish barilla, and all the best soda used in Europe. It does not appear that the growth of these has hitherto been fairly tried in Britain; and even the *S. kali*, which grows freely from seed, notwithstanding it at one time formed a pretty considerable branch of trade, was never made the subject of careful cultivation.

* From *salsus*, salt, in allusion to the saline properties of the species.

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II. DIPSACUS*. (*Tourn.*)

Belonging to Class Exogens or Dicotyledons; Campanal Alliance of Lindley; Nat. Ord. Dipsacaceæ; Linn. Cl. 4, Ord. 1.

DIPSACUS FULLONUM.

CLOTHIERS' TEASEL.

53

Leaves without foot-stalks, with small scattered spines on their margins and surfaces; stems upright, branching, angled or furrowed, and prickly; heads cylindrical; chaff prominent, rigid, with recurved spiny points; perennial. Native of England.

The Clothiers' Teasel is cultivated to a considerable extent in the woollen cloth manufacturing districts of England, for its use in raising the nap upon these stuffs, which it does by means of the rigid hooked awns or chaff of the heads, these being fixed round the circumference of a large broad wheel, which is made to revolve while the cloth is held against them. It grows best on superior rich soils of medium or rather strong texture, which should be reduced to a fine tilth previous to sowing. This operation is generally performed in March, and the usual method was formerly broad-cast, at the ratio of about a peck of seed to the acre; but the drill system is now pretty generally adopted, by which, in addition to other advantages, a saving of about a fourth part of the seed is attained. The after-culture consists of thinning out the plants to about a foot apart, and keeping them free from weeds until the month of August in the following year, when the heads are cut, tied in bundles, and sold to the manufacturers. It is a frequent custom to sow other crops, as Caraway or Coriander, along with the Teasel; but this practice cannot be recommended.

* Supposed to be from *dipsao*, to thirst, in consquence of the leaves holding water; *dipsakos* is also the Greek name for the disease called diabetes, which is also accompanied by great thirst.

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III. PLANTAGO*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Cortusal Alliance of Lindley; Nat. Ord. Plantaginaceæ; Linn. Cl. 4, Ord. 1.

PLANTAGO PSYLLIUM.

FLEA-WORT.

54 Stem branched, spreading; leaves somewhat toothed and recurved; heads leafless; annual. Native of Spain.

A good deal of attention has of late been bestowed on the cultivation of Flea-wort in France, from the circumstance of its yielding a gelatinous viscid substance, which is used by paper stainers, and found much superior to the extract obtained from lintseed, which was formerly and is still made use of by them, that of the Flea-wort being much more easily dried. It has not hitherto been grown in this country, except for experiment.

* From *planta*, sole of the foot, from a fancied resemblance in the leaves.

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IV. SCIRPUS*. (*Beauvois.*)

Belonging to Class Endogens or Monocotyledons; Glumal Alliance of Lindley; Nat. Ord. Cyperaceæ; Linn. Cl. 3, *Ord.* 1.

SCIRPUS LACUSTRIS.

TALL-CLUB *or* BULL-RUSH.

55

Culm or stalk about six feet in height, round, and filled with soft white pith in the centre, about half an inch in diameter at the base, where it is generally furnished with two sheaths, the interior one ending in a leaf-like point; perennial. Grows naturally on alluvial soils which are occasionally covered with fresh water, as by the sides of lakes, rivers, &c.

The Bull-rush is much used by coopers for putting between the staves of barrels, &c., also by chair-makers for making chair bottoms, and for various other purposes, for which it might be profitably grown in marshes, where the soil is not very peaty, and of rather superior quality; particularly on the banks of rivers which are flooded by fresh-water tides.

Many others of the Natural Order *Cyperaceæ* are employed for various economical purposes, such as forming seats, ropes, mats, fancy basket-work, thatching houses, &c.; for which purposes, although they may be beneficially employed when found growing in sufficient quantities, yet they are not at all likely to be cultivated advantageously, under any circumstances, for such alone.

* From the Celtic *cirs*, rushes.

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V. EQUISETUM*. (*Linn.*)

Belonging to Class Acrogens; Muscal Alliance of Lindley; Nat. Ord. Equisetaceæ; Linn. Cl. 24, Ord. 2.

EQUISETUM HYEMALE.

LARGE BRANCHLESS HORSE-TAIL *or* DUTCH RUSH.

56

Stems simple, erect, rough; roots creeping; perennial. Grows naturally in moist, thick, shady woods, but by no means abundant in Scotland.

The dried stems of this plant are used extensively for polishing wood, metal, &c.; and, from being generally imported from Holland, have received the name of Dutch Rushes. As the *E. hyemale* grows naturally in places where few other plants will exist, it might be cultivated with advantage under trees, on rather light moist but superior soils. It can only be propagated by dividing and transplanting the roots.

* From *equus*, a horse, and *seta*, hair, in allusion to the fine hair-like branches.

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VI. CORIANDRINUM*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Umbellal Alliance of Lindley; Nat. Ord. Apiaceæ; Linn. Cl. 5, Ord. 2.

CORIANDRINUM SATIVUM.

COMMON *or* CULTIVATED CORIANDER.

57

Stem leaves much more cut than those of the root, and all possessed of rather a strong disagreeable smell; stems pretty upright, much branched, but acquiring a drooping habit, as the globular seeds ripen; annual. Naturalised in some parts of England, but supposed to have been originally introduced from the south of Europe.

The cultivation of Coriander for its seed, which is always in considerable demand, has in Britain hitherto been almost exclusively confined to the southern districts of England, and is so closely assimilated with that of the next plant (Caraway), that the culture of both is here noticed.

The demand for and application of Coriander seeds is much the same as regards those of the Caraway, and in the south of England they are generally cultivated together—18lbs. of Caraway mixed with 15lbs of Coriander being usually allowed to the acre. These are sown in March or early in April on rather strong rich land, and such as is newly broken up from pasture is preferred. The Coriander being an annual, yields its crop the first season, and is generally ready to cut in the beginning of July; it is then left on the field to dry, and the seed afterwards beaten out on cloths, the facility with which these are detached not admitting of carting home to the barn. In April following, the Caraway will require a hoeing to destroy weeds, and another in June. The crop will be ready in July, and requires the same treatment as the Coriander.

* From *koris*, a bug, in allusion to the smell of the leaves.

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Although few trials on an extensive scale have been made of the culture of Coriander and Caraway in Scotland, yet the result of the various experiments made by us sufficiently proves that the cultivation of it would succeed there as well as in England. The harvesting might be a week or a fortnight later, but even at that period (end of July or beginning of August) the weather is generally drier than at any other period of the season, and consequently most favourable for getting the crop properly secured. A seemingly preferable mode of cultivation would be to sow them both in drills alternately, by which means the Caraway would be more easily hoed and cleaned after the removal of the Coriander.

VII. CARUM*. (*Koch.*)

Belonging to Class Exogens or Dicotyledons; Umbellal Alliance of Lindley; Nat. Ord. Apiaceæ; Linn. Cl. 5, Ord. 2.

CARUM CARUI.

COMMON CARAWAY.

58 Stem from two to two and a half feet in height, with numerous spreading branches; leaves finely cut, and of a deep green colour; flowers white; roots somewhat fusiform; biennial. Grows naturally in some parts of England.

The seeds of Caraway are used to a considerable extent in confectionary, also for flavouring cheese, spirits, &c. and in the distillery. The leaves, to a limited extent, are used in salads, or as a pot-herb like paraley, and the roots are by some preferred to those of the parsnip.

* From *Caria*, in Asia Minor, being originally found there.

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VIII. CUMINUM*. (*Bankin*).

Belonging to Class Exogens or Dicotyledons; Umbellal Alliance of Lindley; Nat. Ord. Apiaceæ; Linn. Cl. 5, Ord. 2.

CUMINUM CYMINUM.

COMMON CUMIN.

59

Lower leaves broad, upper minutely divided; flowers white; seeds adhesive; annual. Native of Egypt; introduced in 1594.

From the Cumin being a native of such a warm climate as that of Egypt, it was formerly supposed that in Europe its culture was only practicable in the most southern countries. It is now, however, grown in Germany, Holland, and other parts still farther north; and in these countries its seeds are at present the principal carminatives used, as those of the Caraway and Coriander are in Britain; they are also used in the distillery, for imparting a favourite flavour to spirits. In this country Cumin ripens its seeds in gardens about the middle of August, and there seems no doubt that if it were more in demand it might be grown to any extent in early districts.

Besides the Caraway, Coriander, and Cumin, many more umbelliferous plants produce carminative seeds, but are not the objects of cultivation to much extent for these alone. The following are a few of the more common:—*Petroselinum sativum* (Parsley, Div. II. page 122), *Apium graveolens* (Celery), *Anethum graveolens* (Common Dill), and *A. fœniculum* (Fennel); *Ligusticum levisticum* (Lovage), *Pastinaca sativa* (Parsnip), *Angelica archangelica* (Common Angelica), *Myrrhis odoratus* (Myrrh), &c.; in collecting the seeds of which great care is requisite to reject those of other plants belonging to the same Natural Order (*Apiaceæ*), which are violent poisons, and bear a considerable resemblance to the preceding. Of these the most dangerous are *Conium maculatum* (Common Hemlock), *Phellandrum aquaticum* (Water Hemlock), and *Anthusa cynopium* (Fool's Parsley).

* Altered from *quamous*, its Arabic name.

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IX. SINAPIS*. (*Tourn.*)

Belonging to Class Exogens or Dicotyledons; Cistal Alliance of Lindley; Nat. Ord. Brassicaceæ; Linn. Cl. 15, *Ord.* 2.

SINAPIS NIGRA—RED, BROWN, *or* BLACK MUSTARD;
S. ALBA—WHITE MUSTARD.

60
61

Although the Mustards are included and described amongst the Oliferous Plants, their seeds being occasionally crushed for oil in common with those of the Rape, &c., yet the purpose for which they are chiefly used is for making the Flour of Mustard, which, in the case of the first species, is done by removing the outer skin, and afterwards reducing the remainder of the seeds to powder, both of which operations are performed by means of machinery. The manufacture of Mustard was first understood and extensively practised in the county of Durham, and the *S. nigra* was used in preference to the white sort, it being more pungent, and of much finer quality; but as it is impossible to remove the skins entirely, the flour made from the red or black seeded sort retains a darkness of colour which that made from *S. alba* (White-seeded Mustard) wants; and as much less labour is required in the manufacture of the latter, it is now employed to the greatest extent, either alone, or more generally in mixture with the former, particularly in Britain. In France, however, and other parts of the Continent, the black or red mustard seed is still chiefly used; but as the art of removing the skin is there not properly known, the flour made from it has a very dark or greyish colour.

For further particulars of these plants, see page 22 of this Division.

* From the Celtic *nap*, a designation applied to all plants resembling the cabbage or turnip.

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X. COCHLEARIA*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Cistal Alliance of Lindley; Nat. Ord. Brassicaceæ; Linn. Cl. 15, *Ord.* 1.

COCHLEARIA ARMORACEA.

HORSE-RADISH.

62

Root-leaves oblong and notched, those of the stem long, lanceolate, toothed or cut; flowers white; pods short, thick, and tapering to both ends; roots whitish, thick, fleshy, long, and branching.

The Horse Radish is a well-known plant, the roots of which are commonly used as a condiment to roast beef; but of late years it has been cultivated in fields to a considerable extent in some parts of England for an extract obtained from its roots, which is beneficially employed for preserving mustard prepared for the table, and exported to the East and West Indies in that state. To grow the root to the greatest perfection requires a rich, damp, and deep soil. Small pieces of the root will vegetate, but it is as well that each set be provided with a crown or bud; these should be planted rather deep, and the crop is ready for taking up the second or third season after planting.

* From *cochlear*, a spoon, the leaves being hollowed like the bowl of a spoon.

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XI. HUMULUS*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Urtical Alliance of Lindley; Nat. Ord. Cannabinaceæ; Linn. Cl. 22, Ord. 5.

HUMULUS LUPULUS.

HOP.

63 Although the Hop has been previously noticed in Sect. I. as a plant yielding fibre, it is never cultivated for that purpose alone, but (in Britain at least) almost exclusively for the bitter principle contained in the flowers and catkins of the female plants, which are employed in the brewing of ale, small beer, and porter, to impart to these an aromatic bitter taste, and prevent them from becoming sour. There are several cultivated varieties of Hop, distinguished by the names of Flemish, Goldings, &c. Of these the Flemish comes nearest the wild sort, and is consequently inferior in quality to the others, but is much more hardy and less liable to be injured by unfavourable harvest weather. Its limited cultivation, by all extensive growers, is, therefore, recommended, and, from possessing these properties, it seems the sort most likely to be successfully cultivated in Scotland, the climate of which is generally considered unsuited for the Hop, its growth in Britain being at present confined to the southern counties of England.

Clay soils and strong deep loams having a free porous subsoil with a south or westerly exposure, and well sheltered by plantations from the north and easterly winds, (but at the same time not so much as to prevent the free circulation of air), are best adapted for hop plantations; previously to forming which, the ground should be cleared of weeds by fallowing or otherwise, well manured, trenched, and pulverised. The planting is performed either in

* From *humus*, the ground, in allusion to the habit of the plant, which, if not supported, trails along the ground.

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March or April, when cuttings are used, or in October and November, when ground plants or slips from those of an old plantation are employed. In either case small pits are made in rows from six to eight feet distant every way, into each of which from a half bushel to a bushel of farm-yard manure is put, and the earth placed over it in the form of small hillocks. On each of these hillocks from four to six plants or cuttings are planted by means of dibbles; and, as it is the third year after planting before the Hop comes into full bearing, other crops of a light and unimpoverishing nature, such as onions, turnips, &c. are generally grown between the rows, taking care, however, not to allow either them or weeds to injure the hop plants. In May, a pole from six to nine inches in circumference, and from fifteen to twenty feet in height, is placed on each hillock for the support of the plants; and in harvesting the crop in September, when the seeds assume a somewhat ripened-like colour, the stems are cut round at the ground, and, together with the poles, laid on wooden frames to admit of the catkins being easily gathered. These are then carried immediately to kilns, dried, and packed in bags for sale. The average length of time which a hop plantation may be considered to remain in a good bearing condition on rich deep soil, is about twenty years, but in some instances they are allowed to remain thirty years before being broken up, and the land cleared of their roots for corn crops. No crop is more precarious or liable to suffer from mildew, blight, attacks of insects, weather, &c.

Several other plants have been recommended and used as substitutes for the Hop in brewing: of these the most easily obtained are the following: Twigs of *Buxus sempervirens* (Common Boxwood), which are extensively used in France; *Menyanthus trifoliata* (Marsh Trefoil or Buckbean), one ounce of the dried leaves of which is said to be equivalent to half a pound of Hops; leaves of *Glechoma hederacea* (Ground Ivy); roots of several of the Gentians, as *Gentiana acaulis, G. lutea, G. purpurea, G. rubra*, &c. In some of the northern countries of Europe, and formerly occasionally in Britain, the tops or twigs of *Erica vulgaris* (Common Heath), *Cytisus scoparium* (Common Broom), &c., are also used as substitutes.

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XII. ASTRAGALUS*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Rosal Alliance of Lindley; Nat. Ord. Fabaceæ; Linn. Cl. 17, *Ord.* 4.

ASTRAGALUS BÆTICUS.

TRIANGULAR-PODDED MILK-VETCH.

64 Stems upright and branching; leaflets oblong, blunt, each with a notch and a small withered-like prickle at the points; spikes few-flowered, scarcely so long as the leaves; pods triangular and curved, with hooked points; annual. Native of the south of Europe.

The *Astragalus bæticus* (Swedish Coffee), is cultivated in Hungary, Germany, and other parts of the Continent, from whence it has been introduced into Britain for its seeds, which are roasted and ground, and used either alone as a substitute for coffee or mixed with it; in the former state it is by some preferred to that wholesome beverage, and in the latter is considered to improve its flavour. It is of the easiest culture, and may be sown in April in drills, twelve or fifteen inches apart, on rather light sandy soil, and reaped in August following.

Although plants employed, or likely to be so, as substitutes for Coffee or Tea, cannot be expected to form any important part of field culture in this country, yet it is not deemed out of place here to mention a few of the hardy plants which have been tried and used for these purposes with most success. Commencing, therefore, with such as may be used for Coffee, and without giving any generic or specific descriptions, we may particularise the following:—*Cichorium Intybus* (Common Chiccory), (See Div. II. page 114), the roots of which, as also of *Leontodon taraxacum* (Common Dandelion), and *Beta vulgaris*

* From *astragalos*, vertebra or talus, the seeds being squeezed into a squarish form in one of the species.

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hortensis (Garden Beet), after being cut in small pieces, and then roasted and ground, are so used; as are also the seeds of *Galium Aparine* (Goose-grass or Cleavers), *Iris pseudacorus* (Common Yellow Iris), and Wheat and Rye.

As substitutes for Tea, the leaves of the following more hardy plants have been used:—*Betula lenta* (Sweet American Birch or Mountain Mahogany), *Ledum palustre* (Marsh Labrador Tea Plant), *Ribes nigrum* (Black Currant), and others of the genus; *Salvia officinalis* (Common Sage), *Agrimonia eupatoria* (Common Agrimony), *Veronica officinalis* (Officinal Speedwell), *Lithospermum officinale* (Officinal Gromwell or New Zealand Tea), *Solidago odora* (Sweet-smelling Golden Rod), *S. virgaurea* (Common Dwarf Golden Rod), *Prunus spinosa* (Common Sloe-Tree), &c.; the leaves of the last of which, together with those of *Fraxinus excelsior* (Common Ash Tree), and *Cratægus oxyacantha* (Common Hawthorn), are more generally used for adulterating the genuine teas than as substitutes for them.

The true Tea plants have been found capable of withstanding the winter in Britain, with a little protection when young, particularly *Thea viridis;* but how far their culture from seed procured in the most northern or colder parts of their native countries, China and Japan, would be attended with advantage in Britain, yet remains to be ascertained.

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XIII. NICOTIANA*. (*Tourn.*)

Belonging to Class Exogens or Dicotyledons; Solanal Alliance of Lindley; Nat. Ord. Solanaceæ; Linn. Cl. 5, Ord. 1.

1° NICOTIANA TABACUM.

VIRGINIAN TOBACCO.

65 Leaves without foot-stalks, oblong, and tapering slowly to the point, large, averaging about two feet in length by from nine to twelve inches at the greatest breadth; stems upright, about six feet in height; flowers pink-coloured; tube much longer than the calyx, slightly inflated within the mouth; annual. Native of North America.

This species is cultivated to a greater extent than any other in North America; but as it is considerably later in ripening its seeds, and also more tender than the next, it is not so well suited to the climate of Britain.

2° NICOTIANA RUSTICA.

COMMON GREEN TOBACCO.

66 Leaves stalked, somewhat approaching to a heart-shape, about nine to twelve inches long by five to eight inches in breadth; stems upright, from four to five feet in height; flowers of a dull yellowish-green colour; tube cylindrical, scarcely longer than the calyx; annual. Native of America.

This is the species chiefly cultivated in the northern countries of Europe. In Scotland it ripens seed in ordinary seasons about the middle of August; at which period *N. tabacum*, unless assisted at some period of its growth by artificial heat, is generally only coming into flower. The seeds of *N. rus-*

* In honour of John Nicot, of Nismes, Ambassador from the King of France to Portugal, who procured the first seeds from a Dutchman, who had them from Florida.

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tica will lie in the ground for a number af seasons, retaining their vegetative powers, so that where a crop has been once grown, the seedling plants will spring up spontaneously for a series of years thereafter.

Tobacco succeeds best on rich but rather light loamy soils, and may be cultivated (sown in the end of April) in the same manner as turnips; but a preferable mode in such climates as that of Britain, and which is practised in Germany, &c., is to sow the seeds in March, on a moderate hot-bed, and protect the young plants from frosts at night, until about the second week of May, when they may be planted out in drills.

Many more of the annual species of *Nicotiana* are cultivated for the manufacture of tobacco, but those above described are the hardiest, and best adapted for the climate of Britain. It does not seem, however, that their culture (which is at present prohibited except to a limited extent) will ever become an object of great importance in this country; for although any quantity of leaves might easily be produced, they are found deficient in those narcotic and pungent qualities on which their chief value depends, in comparison with the growth of warmer climates.

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XIV. GLYCYRRHIZA*. (*Linn.*)

Belonging to Class Exogens or Dicotyledons; Roeal Alliance of Lindley; Nat. Ord. Fabaceæ; Linn. Cl. 17, *Ord.* 4.

GLYCYRRHIZA OFFICINALIS.

COMMON LIQUORICE.

67 Roots thick, long, and running deep into the ground; perennial. Native of the south of Europe.

Besides the uses of liquorice roots in medicine, they are also employed in brewing, and are pretty extensively grown for these purposes in some parts of England. Liquorice requires a rich deep dry sandy soil, which, previous to forming a new plantation, should be trenched to the depth of about three feet, and a liberal allowance of manure, regularly mixed with the earth in trenching. The plants, which are procured by slipping them from those in old plantations, are, either in February or March, dibbled in rows three feet apart, and from eighteen inches to two feet in the row. They require three summers' growth before being fit for use, when the roots are obtained by retrenching the whole, and are then stored in sand for their preservation until required. As the plants are small during the first summer of their growth, a crop of onions is often taken in the insterstices of the rows.

* From *glykys*, sweet, and *rhiza*, a root.

END OF FOURTH DIVISION.

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DIVISION V.

PLANTS CULTIVATED FOR THEIR TIMBER, BARK, &c.

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" Much can they praise the trees so straight and hy :
The sayling Pine ; the Cedar proud and tall ;
The vine-propp Elme ; the Poplar never dry ;
The builder Oake, sole king of forrests all ;
The Aspine, good for staves ; the Cypresse funerall :
The Laurell, meed of mightie conquerours
And poets sage ; the Firre that weepeth still ;
The Willow, worne of forlorne paramours ;
The Eugh, obedient to the bender's will ;
The Birch for shaftes ; the Sallow for the mill ;
The Mirrhe sweete-bleeding in the bitter wound ;
The warlike Beech ; the Ash for nothing ill ;
The fruitfull Olive ; and the Platane round ;
The carver Holme ; the Maple, seeldom inward sound."

SPENCER'S FAERIE QUEENE, Book i., Canto 1.

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SECT. I.—TIMBER AND ORNAMENTAL TREES.

INTRODUCTION.

THIS country, as is well known, was at one period thickly wooded. The ravages of war and the necessity of clearing for more extended arable cultivation, to meet the wants of an increasing population, soon reduced the natural forests, leaving the country almost entirely destitute of trees. It was not long, however, ere the necessities of man rendered it of consequence that a certain quantity of timber should be cultivated; hence the rearing of wood became an important branch of the Agriculture of the country.

In reading the history of every civilized nation, we find the culture of trees formed one of the chief rural studies; it formed an agreeable solace and employment from the fatigues alike of war and senate; and when the annals of Arboriculture are compiled, many a great and glorious name will be found recorded in them. "Trees," says Loudon, in the introduction to that most excellent work, the *Arboretum et Fruticetum Britannicum*, "are not only in appearance the most striking and grand objects of the vegetable creation, but, in reality, they are those which contribute most to human comfort and improvement. If the cereal grasses and edible roots are essential for supplying food to sustain human existence, trees are not less so for supplying timber, without which there could neither be the houses and furniture of civilized life, nor the machines of commerce and refinement. Man may live and be clothed in a savage, and even in a pastoral state, by herbaceous productions alone, but he cannot advance further; he cannot till the ground, or build

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Introduction.

houses or ships, he cannot become an agriculturist or a merchant without the use of trees."

The forest trees indigenous to this country are few; but the number capable of being cultivated in Britain is so great, that a complete enumeration of them, accompanied with even the most succinct descriptions, would far exceed the limits to which a Synopsis like the present must necessarily be confined; and a mere list of names without descriptive characters would not only be in a great measure useless, but also at variance with the plan adopted in the preceding pages. It has, therefore, been judged expedient to treat of the limited number which, have actually produced timber, and of which specimens are to be seen. The trees of the Pine or Fir tribe are those which, of late years, have most engaged the notice of cultivators; and as the interest which they have excited is undiminished, our attention has naturally been more particularly directed to them. The success which has attended the cultivation of the Larch, and the perfection to which, not only the natural forests, but also the numerous and extensive plantations of the Scots Fir have attained in this country, lead us to expect favourable results from the extended culture of the Abietineæ.

This Section includes a few kinds which do not rank as timber trees, and also some which are cultivated indifferently, both for their timber and fruit; but it will be found interesting to observe by the specimens, to what size they sometimes attain in this country.

Quercus.

I. QUERCUS. (*Linn.*)

Quernal Alliance of Lindley; Nat. Ord. Corylaceæ; Linn. Cl. 21, *Ord.* 9.

English—The Oak.	*Italian*—Quercia.	*Polish*—Dab.
French—Chene.	*Spanish*—Roble.	*Danish*—Eeg.
German—Eiche.	*Persian*—Pélut.	*Swedish*—Ek.
Dutch—Eik.	*Russian*—Dub.	*Chinese*—Xi Kian Ish.

Generic characters.—The male flowers disposed in groups of long pendulous

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catkins, each flower having six to eight stamens, attended by the same number of bracts coherent at the base; female flowers borne upon erect axillary peduncles; a few upon a peduncle; ovary three-celled, style short, stigma three-lobed; fruit (acorn) generally oblong or ovate. Species numerous. Natives of the temperate zone, northern hemisphere, though some are found on mountains on the torrid zone. Leaves alternate, annual or persistent; scales of bud imbricated; leaves conduplicate in the bud. QUERCUS.

1° QUERCUS CERRIS. Q. Cerris.

MOSSY-CUPPED OR TURKEY OAK.

Specific characters.—Leaves more or less deciduous, on very short stalks, oblong, deeply and unequally pinnatifid, hairy beneath; lobes lanceolate, acute, somewhat angular; stipules longer than foot-stalk; calyx of the fruit hemispherical, bristly. 1

This tree was introduced into Britain fully more than a century ago. It attains to the same size as the common oak, but grows more rapidly. Few specimens have as yet been cut down for timber in this country, but there is every reason to believe that it is equal in quality to the common oak, when reared under favourable circumstances. The specimen we have is from Mr Gorrie, of Annat Cottage, in Perthshire.

2° QUERCUS COCCINEA. (*Willd.*) Q. coccinea.

SCARLET OAK.

Specific characters.—A handsome large tree, indigenous to North America, attaining 80 feet in height by three to four feet in diameter. The habit of growth is more rigid compared with *Q. rubra*, and the branches are very flexible; bark entire, thick, of a dark colour; wood reddish, firm, partaking a fine polish; leaves long petioled, beautiful shining green on both sides, deeply laciniated on old trees. They change by the first frosts in autumn to a brilliant scarlet colour, rendering it very handsome. 2

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Quercus Ilex.

3° QUERCUS ILEX.

EVERGREEN OAK.

3

Specific characters.—Leaves ovate-oblong, acute, coriaceous, entire or serrated; hoary beneath; bark even; acorn ovate.

This species is not a native of Britain, but has been cultivated from the most remote period. It is not generally grown as a forest tree, but has long been raised in parks and pleasure grounds for ornament. The wood is very close-grained, heavy, and hard, and of a brown colour. The sap-wood is white. It is of great duration, and is usually applied to minor purposes, such as handles for axes, wedges, &c. We believe the most successful cultivator of this species is the Earl of Leicester. At Holkham there are remarkably fine specimens.

Q. pedunculata.

4° QUERCUS PEDUNCULATA.

COMMON OR PEDUNCLED OAK.

4

Specific characters.—Leaves deciduous, oblong, smooth, dilated upwards; sinuses rather acute; lobes obtuse; stalks of the fruit elongated; acorn oblong.

This well-known tree is a native of Britain, and the many purposes to which it is applied are so familiar to every one as to render it quite unnecessary for any lengthened notice here. The acorns formed a principal part of the diet of the aborigines of this country; and in later times, as in the present day in Spain, immense herds of swine were reared in the oak forests in the southern districts of England. The oak is of slow growth, and requires nearly a century to come to maturity. It attains to a great age and size. Specimens are recorded in this country as producing upwards of 1500 feet of timber.

The building of ships is one of the chief uses of oak wood, as it does not readily decay when exposed to wet, and seldom splinters. It is also extensively used for wainscot and furniture. The bark is valuable for tanning on account of the large proportion of tannin and gallic acid it contains.

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5° QUERCUS SESSILIFLORUS.

QUERCUS sessiliflorus.

COMMON SHORT-STALKED OAK.

5

Specific characters.—Leaves on long foot-stalks, deciduous, oblong, smooth; sinuses opposite, rather acute; lobes obtuse; fruit sessile; acorn oblong.

It has been doubted by many eminent botanists, whether this is really a species, or only a variety. There can be no doubt, however, that in general appearance it is easily recognised from the common. The foliage is always of a much greener tinge, and the leaves remain much longer, even until winter is considerably advanced; while the qualities of timber, bark, &c., are said to excel it, but both species are used indiscriminately by ship-builders.

The oak trees so frequently dug up in the peat mosses of this country, commonly known as Bog Oak, in a fine state of preservation, are generally quite black, and used for furniture.

II. ALNUS. (*Tourn.*)

ALNUS.

Amental Alliance of Lindley; Nat. Ord. Betulaceæ; Linn. Cl. 21, *Ord.* 4.

English—THE ALDER.	*Dutch*—ELZEBOOM.	*Spanish*—ALISO
French—AUNE.	*Danish*—ELL.	*Russian*—OLCHA.
German—ERLE.	*Italian*—ONTANO.	*Polonian*—OLSZA.

Generic characters.—Barren flowers numerous, aggregate in a loose cylindrical catkin; calyx a permanent scale, three-flowered, with two minute lateral scales; corolla composed of three equal florets; filaments four, from the tube of the corolla; anthers two round lobes; fertile flowers fewer, in an oval firm catkin; corolla none; styles two; stigma simple; nut ovate, without wings; leaves simple, alternate, deciduous; flowers terminal, greenish white, appearing before the foliage.

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ALNUS glutinosa.

1° ALNUS GLUTINOSA. (*Gærtn.*)

English—COMMON ALDER. | *German*—GEMEINE ERLE. | *Italian*—ALNO.
French—AUNE COMMUN. | *Dutch*—ELSENBOOM. | *Spanish*—ALANIO NIGRO.

6

Specific characters.—Leaves roundish, wavy, serrated, glutinous, rather abrupt, downy at the branching of the veins beneath.

A very common tree in this country, found growing in moist situations, and near rivulets, all over Europe, several parts of Asia, and the north of Africa. The rate of growth is from two to three feet a-year, and it attains the height of 50, 60, or even 70 feet, by two feet in diameter; it retains its leaves longest of any of our deciduous trees; the wood is soft, of a brownish colour, and of great durability in water, is used for turnery, sculpture, and wooden vessels, soles for shoes, &c. The tree was once in great repute for the foundations of bridges and other buildings, in moist places underground. It is on record, that the Old Bridge of London was underlaid with it. The bark is still used in the north of Scotland for dyeing a kind of black, of which specimens may be seen in the Collection. Alder is now frequently used as a nurse in moist plantations near the sea, where it grows well. The charcoal of alder is used in the preparation of gunpowder. There are several varieties in cultivation, the most distinct of which is the cut-leaved (*A. laciniata*), which is a native of France, and excels the species in size and beauty, producing a fine straight stem, and thriving in dryer soils. The properties of the wood of both are the same.

A. incana.

2° ALNUS INCANA. (*Willd.*)

HOARY-LEAVED ALDER.

7

Specific characters.—Leaves oblong, acute, pubescent beneath; axils of the veins naked; stipules lanceolate.

A fine tree, 60 to 70 feet high, from the northern parts of Europe and North America; introduced in 1780; is quite hardy, and of as easy culture as the common alder, possessing the same qualities as it, and of equally rapid growth;

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distinguished at once by the leaves being more pointed, which are hoary, and having no hairs on the axils of the veins on the under side. ALNUS incana.

III. CARPINUS. (*Tourn.*) CARPINUS.

Quernal Alliance of Lindley; Nat. Ord. Corylaceæ; Linn. Cl. 5, Ord. 1.

English—HORNBEAM.	*Italian*—CARPINO.	*Russian*—GRAB.
French—CHARME.	*Portuguese*—CARPE.	*Danish*—AVENBÖG.
German—HAINBUCHE.	*Spanish*—CHARMILLA.	

Generic characters.—Flowers unisexual; those of the two sexes in distinct catkins upon one plant. Male flowers: the catkin lateral, sessile, cylindrical; bracteæ imbricate. The flower consists of 12 or more stamens, inserted at the base of the bractea; anthers bearded at the tip, one-celled. Female flowers in lax, terminal catkins, with two kinds of catkins, the outer and inner; outer bracteas entire, soon falling off; inner bracteas in pairs, each three-lobed; calyx clothing the ovary to near the tip, and adhering to it; ovary two-celled, an ovule in each, one of them becoming abortive; style very short; stigmas two, long, thread-shaped; fruit nut-like, woody, inclosing one seed. Natives of Europe, the Levant, and North America.

1° CARPINUS BETULUS. (*Linn.*) C. Betulus.

COMMON HORNBEAM.

Specific characters.—A deciduous tree, indigenous to Britain and other parts of Europe, attaining upwards of 60 feet in height, and forming a spreading head. Leaves doubly serrated, pointed, plaited when young, with numerous, parallel, transverse, hairy ribs; colour dark green, changing to a russet brown in autumn, and remaining on the tree till spring, like those of the beech. Wood white, hard, heavy, tenacious, and very close-grained, but difficult to be worked; excellent, however, for wheelwrights' work, and particularly well adapted for mill-cogs. It is greatly esteemed as fuel, lights easily, burns bright, long, and gives out abundance of heat; consequently of great value on the Continent in that respect. It is raised from 8

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Carpinus Betulus.

seed, which is produced freely in England, but rarely in Scotland. Prefers cold, hard, clayey soils, and exposed situations, and attains the largest size on plains, in loams or clays that are not too rich. In chalk it does not thrive, in which respect it is directly the reverse of beech.

Fagus.

IV. FAGUS. (*Linn.*)

Quernal Alliance of Lindley; Nat. Ord. Corylaceæ; Linn. Cl. 21, *Ord.* 9.

THE BEECH.

Generic characters.—Male flowers in drooping heads, three or four in each, with minute deciduous bracts; calyx bell-shaped, five to six cleft; stamens eight to twelve, arising from the bottom of the calyx; female flowers two to six together, with a pitcher-shaped, four-lobed involucre, each flower consisting of a calyx, lengthened into a laciniate limb and investing the ovary; fruit a nut; leaves simple, alternate, deciduous, serrated, planted in the bud.

F. sylvatica.

1° FAGUS SYLVATICA. (*Linn.*)

English—Common Beech.	*Dutch*—Roodbuike.	*Russian*—Buk.
French—Hetre Commun.	*Italian*—Faggio.	*Swedish*—Bok.
German—Gemeine Buche.	*Spanish*—Haya.	*Danish*—Bog.

9

Specific characters.—A magnificent umbrageous tree, "at once the Hercules and Adonis of our sylva," attaining in about 60 or 70 years, in favourable situations, a height of 70 and even 100 feet, and four and five feet in diameter. It succeeds best when planted by itself in moderately dry situations, and even on rocks where its long roots penetrate into the crevices. It is a native of both Continents, but was probably introduced by the Romans into Britain, as Cæsar mentions, that "he saw none in his day." The wood when green is the hardest of all British timbers; its durability is increased by steeping in water; is chiefly used by cabinetmakers, coopers, and coachbuilders, and is most valuable in articles of turnery. It burns freely when green; the mast or seed is used for feeding pigs and poultry, and is

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said to improve the flavour of their flesh; a substitute for oil of olives has also been extracted from the seed. The beech is very extensively used for hedges, and is most valuable for that purpose when shelter is required. Although the tree is deciduous, yet when regularly cut the leaves remain persistent all winter. The roots are not liable to spread horizontally, but penetrate deep into the soil, so that the crops which may be near it are not injured. There are several distinct varieties grown as ornamental trees, of which, especially, the weeping, crested-leaved, and purple are well known.

FAGUS sylvatica.

V. ULMUS. (*Linn.*)

ULMUS.

Rhamnal Alliance of Lindley; Nat. Ord. Ulmaceæ; Linn. Cl. 5, Ord. 2.

English—ELM.	*Italian*—OLMO.	*Portuguese*—OLMO.
French—ORME.	*Spanish*—OLMO.	*Polish*—ILM.
German—ULME or RUSTER.	*Russian*—ILIM.	*Turkish*—KASAGATSCH.
Dutch—OLM.		

Generic characters.—Flowers in lateral groups, bisexual, monœcious, protruded before the leaves; calyx reddish, distinct from the ovary, of one piece, four, five, or eight segments, imbricately arranged; stamens as many as the segments; style short or wanting; stigmas two, acuminate; fruit a samara, with a membranous wing; leaves simple, alternate, stipulate, deciduous, serrate, feather-nerved, rough, unequal at the base; flowers small, whitish or reddish; decaying leaves rich yellow.

1° ULMUS CAMPESTRIS. (*Linn.*)

U. campestris.

ENGLISH, OR SMALL-LEAVED ELM.

Specific characters.—Leaves doubly serrated, rough; flowers nearly sessile, four-cleft; samara oblong, deeply cloven, glabrous.

10

This tree being a native of England, France, and the warmer parts of Europe, was introduced into Scotland at a very early period, and is considered one of the

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Ulmus campestris.

finest of European deciduous trees for park scenery or hedgerows. It lives for upwards of 200 years. forming a remarkably straight, tall trunk. The quality of the timber depends a good deal on the soil in which it is grown, being always best on a dry, loamy soil, and plenty of air. It loses a good deal in drying, is of a brownish colour, hard and fine grained, possessing great lateral adhesion, therefore not liable to crack, even when exposed to sun and weather. In ship-building it is valuable for blocks, but especially for keels. The leaves are eaten by cattle, and most of the natural grasses grow readily under it. There are upwards of 20 varieties of this tree in cultivation, differing in habit, size, and colour of the leaves from the species, some of which are very distinct and ornamental, but none excelling it either in rapidity of growth or quality of timber.

U. montana.

2° ULMUS MONTANA. (*Bauh.*)

MOUNTAIN, SCOTS, OR WYCH.

11

Specific characters.—Leaves pointed, rough, broad, and doubly serrated; flowers on long footstalks, five to six cleft; samara somewhat orbicular, cloven, naked; branches drooping; bark smooth. A spreading, deciduous, strongly-branching tree, 35 to 50 feet high. Flowers in April and May. Seeds ripe in June. Abundant in Scotland, both in natural and artificial plantations. The trunk is not so lofty, nor the wood so heavy, as the English elm; and though coarse-grained is very highly prized by ship-builders, cartwrights, pump-makers, coach-makers, and cabinet-makers. It possesses great longitudinal adhesion, and is consequently one of our stiffest and straightest timbers. It is, however, liable to split when dried too suddenly after being felled. It suits a great variety of soils and exposures, but grows best on sandy loam, where there is natural drainage. It does not produce suckers like most of the elms. The young branches and leaves have been recommended by antient writers as food for cattle in seasons of scarcity; and an excellent charcoal is made of the branches.

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VI. SALIX. (*Linn.*)

SALIX.

Amental Alliance of Lindley; Nat. Ord. Salicaceæ; Linn. Cl. 22, Ord. 2.

English—WILLOW. | *Italian*—SALCIO. | *Russian*—WETLA.
French—SAULE. | *Spanish*—SAUCE. | *Danish*—PIIL.
German—WEIDE. | *Japanese*—JENO KI. | *Swedish*—PIHL.
Dutch—WILG.

Generic characters.—Shrubs from two inches, and often trees up to 90 feet in height, with round and flexible branches; leaves entire, stalked, generally alternate, deciduous, spirally arranged, except in a few species. Natives of the frigid regions, and mostly of the northern hemisphere. They are invariably found in moist soils and cold situations. Bractes to the flower of each sex entire. Male flower consisting of one to five stamens, more in a few species, having one or more glands inserted contiguously to the stamens; female flower consisting of a pistil that is stalked or sessile, or nearly sessile, and one or more glands inserted contiguously to it; leaves, in most with the disk more or less lanceolate.

1° SALIX ALBA. (*Linn.*)

S. alba.

COMMON WHITE, OR HUNTINGDON WILLOW. (Borrer's group *Albæ.*)

12

Specific characters.—A native of Europe, from Norway and Sweden to the Mediterranean Sea; also of north-east and west Asia; and now cultivated in many other countries, for its timber and other qualities. The mode of propagation is so very easy, namely, by cuttings, that, together with its rapid growth, it figures as a valuable timber tree, often attaining 50 or 60 feet in height, in a comparatively short period. It is, besides, one of the few which rank as desirable objects amongst ornamental trees. The bark is used for tanning, and for dyeing yarn of a cinnamon colour. The young shoots are given to cattle, both in a green and a dried state. The wood is used for a variety of purposes, and on account of its toughness, very useful for constructing ship-bottoms, not being so liable to split by accidental shocks. It is found an excellent lining for stone-carts, barrows, &c., and used in turnery, millwork, coopery, &c.

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Salix babylonica.

2° SALIX BABYLONICA. (*Linn.*)

BABYLONIAN, OR WEEPING WILLOW. (Borrer's group *Fragiles.*)

13

Specific characters.—A native of Asia, on the banks of the Euphrates, near Babylon, whence its name, and China, as well as of the north of Africa. There are several varieties, all of which are only planted as ornamental trees, for which they are very useful and striking. The celebrated willow of Napoleon is a slight variety of this species.

S. caprea.

3° SALIX CAPREA. (*Linn.*)

GOAT WILLOW. (Borrer's group *Cinereæ.*)

14

Specific characters.—Indigenous to Britain, and found in woods. A middle-sized tree, with spreading, round, brown, or purplish branches; leaves larger and broader than in any other species, deep green above, with a downy rip, covered with a white down beneath. It is very useful for coppice-wood, and employed for constructing fences, &c.

S. Forbyana.

4° SALIX FORBYANA. (*Smith.*)

FORBY'S WILLOW. (Borrer's group *Purpureæ.*)

15

Specific characters.—A native of England, and valuable for the finer sorts of wicker-work, basket-making, &c.

S. fragilis.

5° SALIX FRAGILIS. (*Linn.*)

BRITTLE-TWIGGED, OR CRACK WILLOW. (Borrer's group *Fragiles.*)

16

Specific characters.—Indigenous to Britain, generally on the banks of rivers and marshy grounds. A tall bushy tree, from 80 to 90 feet in height. It is easily to be distinguished from other species of this genus by the way the branches are disposed, not straight outward from the trunk as usual, but crossing each other. The branches are round and very smooth, and readily detach themselves from the trunk, especially in spring. The wood, especially of the young shoots, is extremely brittle, hence its name.

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6° SALIX RUSSELLIANA. (*Smith.*)

SALIX Russelliana.

DUKE OF BEDFORD'S WILLOW. (Borrer's group *Fragiles.*)

17

Specific characters.—A tree attaining often 80 or 90 feet in height; indigenous to Britain, inhabiting marshy woods and grounds; it flowers in April and May; leaves deeply sinuated and much attenuated; branches long, straight, and slender, not angular in their insertion like those of *S. fragilis*, by which it may be distinguished from that one even when stripped of its leaves.

It is a very valuable timber tree, brought into notice about the beginning of the present century by Francis, Duke of Bedford. On account of its rapid growth, a plantation of it has been found to yield an extraordinary profit after a few years. The bark contains the tanning principle in a superior degree to the oak, and has further been used as a substitute for cinchona in agues. This species is easily propagated by cuttings or truncheons, and grows in a variety of soils and situations; but a good soil near water brings it to the greatest perfection.

7° SALIX TRIANDRA. (*Linn.*)

S. triandra

BASKET WILLOW. (Borrer's group *Triandræ.*)

18

Specific characters.—A native of Britain, forming a tree 30 feet in height, but seldom allowed to grow uncut, and usually met with in osier grounds, producing annually long tough rods, from eight to nine feet in length, used for wicker-work, hoops, &c., and considered very valuable by osier-workers. Leaves perfectly smooth.

8° SALIX VIMINALIS. (*Linn.*)

S. viminalis.

TWIGGY WILLOW, OR COMMON OSIER. (Borrer's group *Viminales.*)

19

Specific characters.—A native of England, growing in wet meadows, and flowers in April and May; leaves linear, somewhat lanceolate, taper-pointed, entire, wavy, snow-white, silvery beneath; branches straight and slender. It is very valuable for its vigorous growth, and cultivated largely for basket-making and hoops.

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Populus.

VII. POPULUS. (*Tourn.*)

Amental Alliance of Lindley; Nat. Ord. Salicaceæ; Linn. Cl. 22, Ord. 7.

English—Poplar.	*Dutch*—Abeelboom.	*Russian*—Topol.
French—Peuplier.	*Italian*—Pioppo.	*Polish*—Topola.
German—Pappel.	*Spanish*—Alamo.	*Danish*—Poppel.

Generic characters.—Deciduous trees, mostly attaining a large size; inhabiting the northern hemisphere. They are usually of remarkably rapid growth, and easily propagated by cuttings. Bracteæ to the flower of each sex laciniated in its terminal edge. Male flower consists of a calyx and at least eight stamens, often of many more; female flower consists of a calyx and a pistil; leaves with the disk more or less oblate, and the petiole generally compressed in the part adjoining the disk. All the species exhibit more or less a degree of tremulous motion when agitated by the slightest breath of wind.

P. alba.

1° POPULUS ALBA. (*Linn.*)

English—White Poplar, or Abele Tree.	*German*—Silber Pappel.
French—Peuplier Blanc.	*Dutch*—Abeelboom.

20

Specific characters.—This tree is indigenous to most parts of Europe, though, perhaps not to Britain; and supposed to have only been introduced from the Continent. It is of rapid growth, and attains a height of from 80 to 90 feet, and flowers in March. Leaves three-lobed and toothed, varying very much in form, on young branches almost palmate; blunt-pointed, veiny, dark green and smooth above, covered with a thick white down on the under side. Wood employed for making packing-cases, and similar purposes, being rather soft and spongy.

P. nigra.

2° POPULUS NIGRA. (*Linn.*)

English—Black Poplar. | *French*—Peuplier Noir. | *German*—Schwarze Pappel.

21

Specific characters.—A native of Europe, widely diffused, especially to the

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south, and formerly very extensively employed in British plantations. A tree from 50 to 80 feet high, with an ample head, and flowers in March and April. Leaves deltoid, pointed, serrated, smooth on both sides; catkins loose, cylindrical; stigmas four, simple, and spreading. It prefers a rich soil, near running water, where it will grow three to four feet every season. Wood yellow, soft, and more fibrous than any other kind of poplar, and for that reason well adapted, and extensively used for turnery. The bark is used for tanning leather, and that of old trees, which becomes corky, often employed by fishermen to keep their nets afloat. POPULUS nigra.

VIII. JUGLANS. (*Linn.*) JUGLANS.

Quernal Alliance of Lindley; Nat. Ord. Juglandaceæ; Linn. Cl. 21, *Ord.* 9.

WALNUT.

Generic characters.—Large trees, natives of Asia and North America. Leaf-bud not covered by scales; leaves alternate, pinnate; leaflets five to nineteen, opposite, with one terminating; flowers unisexual, those of both sexes upon one plant. Male flowers in cylindrical, drooping, solitary, catkins; calyx five to six scales, that are attached to a bractea, at a distance from its base and tip; stamens eighteen to thirty-six. Female flowers solitary, or a few in a group, terminal on shoots of the same year, whereas the male flowers are produced on shoots of the previous year; calyx ovate, including and adhering to the ovary, except in the four-toothed tip; petals four, small, inserted into the free part of the calyx; ovary of one cell, and one erect ovule; stigmas two to three, fleshy, scaly, with glands; fruit a drupe, with a covering, fleshy externally, but fibrous inside, and opens irregularly, inclosing a two-valved nut, containing one seed, which is edible.

1° JUGLANS REGIA. (*Linn.*) J. regia.

English—COMMON WALNUT.	*German*—GEMEINE WALNUSS.	*Spanish*—NOGAL.
French—NOYER COMMUN.	*Italian*—NOCE.	*Cochin-Chinese*—CAY HACH DAO.
Dutch—OCKERNOOTENBOOM.		*Russian*—GRESKIA ORECHI.

Specific characters.—A tree of enormous magnitude, indigenous to Persia, and 22

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Juglans regia.

also to China, as asserted by some. Branches large, spreading; leaves with three or four pairs of leaflets, with one terminating, which is longer than the rest; flowers in April and May in Britain; male flowers in catkins, pendulous near the points of the shoots; bark thick, and deeply furrowed on the trunk, but on the upper branches it is grey and smooth. The leaves when bruised exhale a strong aromatic odour. The fruit is green and oval, containing a nut, which is small and hard in the wild species, but about one and a half inches long, and one and a half inches in diameter in some of the cultivated varieties. The nuts constitute a great commercial article, used as a dessert fruit when dry, and on the Continent an oil is extracted, which is equivalent, when new, to olive oil. They are pickled and preserved in a green state, and ketchup is made of them. Besides being important as a fruit-tree, it is of considerable value as a timber-tree. The wood is compact, veined, of a brown colour, beautifully light and dark shaded, and easy to be worked. It is used for all sorts of cabinet-work, turnery, &c., and on account of its strength and elasticity preferred to any other wood for gun-stocks. The walnut is propagated by the nuts, which are often sown on the spot where they are to remain, but transplanting is decidedly preferable, and now generally adopted. It attains the greatest perfection in a stiff, dry, deep loam, but will grow in a variety of soils, except in such as are saturated with stagnant water. It is said that trees growing on a calcareous soil have the best flavoured fruits, and produce a greater quantity of oil.

Castanea.

IX. CASTANEA. (*Tourn.*)

Quernal Alliance of Lindley; Nat. Ord. Corylaceæ; Linn. Cl. 21, *Ord.* 9.

English—Chesnut.	*Italian*—Castagno.	*Swedish*—Castanietræ.
French—Chataignier.	*Spanish*—Castano.	*Russian*—Keschtan.
German—Tastanienbaum.	*Portuguese*—Castanheiro.	

Generic characters.—Trees and shrubs, natives of the temperate zone of the northern hemisphere, the south of Europe, middle of Asia, North America, and of the

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mountains in the Moluccas Archipelago. Leaves alternate, entire or serrated, plaited in the bud; flowers unisexual or rarely bisexual; those of distinct sexes upon one plant; male flower consists of a six-parted calyx, and ten to fifteen stamens affixed to its bottom, and extended beyond its mouth; female flower consists of an ovary, tapered to the tip, clothed with a calyx, crowned by its six-to-eight-cleft limb, and bearing as many styles and cells, with two pendulous ovules in each. The male flowers are sessile, and arranged in groups along an axillary stalk. Each group consists of many flowers, and is involucrated by a bractea and a bracteole. The female flowers two to three or more together, within a bell-shaped and externally bristly involucre. The groups are disposed on terminal stalks, that are lengthened out as the flowers advance to the fruit. Fruit in a four-valved involucre, inclosing two to three nuts; the rest of the ovaries being abortive.

CASTANEA.

1° CASTANEA VESCA. (*Gærtner.*)

C. vesca.

English—SWEET OR SPANISH CHESNUT. *German*—SUSSE KASTANIE.
French—CHATAIGNE.

Specific characters.—A native of Asia Minor, and extensively cultivated in the temperate parts of Europe; date of introduction to Britain is unknown; but, on account of the aged and large specimens found in various parts, a belief is current that it is indigenous. It forms an umbrageous tree, often upwards of 80 feet in height, and attains a great age. Leaves elliptic-lanceolate, acute, smooth, with many transverse veins, terminating in sharp serratures; deep shining green above, pale, or sometimes glaucous, beneath. The flowers are produced on the wood of the current year, in sessile tufts, along the common stalk; the stamens are numerous and spreading; the fertile flowers are fewer than the barren ones, placed on stalks which lengthen as the fruit advances to perfection. The styles are about six, with long, smooth, bright stigmas; nuts large, broad, ovate, generally two, flat on the inner side, and attached by a scar to the bottom of the greatly enlarged calyx. A deep sandy loam is its favourite soil, but can adapt itself to a variety of soils. The

23

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Castanea vesca.

wood of young trees is very durable, and valued for poles and similar purposes, whereas that of larger trees is not of much value except for fuel. As an ornamental tree, it is very useful in parks, bearing a resemblance to the oak, which it also rivals in longevity. In the south of England it is grown as a fruit-tree, for the nuts, which do not come to perfection farther north.

Viburnum.

X. VIBURNUM. (*Linn.*)

Cinchonal Alliance of Lindley; Nat. Ord. Caprifoliaceæ; Linn. Cl. 5, Ord. 3.

VIBURNUM.

Generic characters.—Shrubs, natives of Europe and Asia, of easy culture and propagation; leaves opposite, petiolate; corymbs of flowers terminal; flowers usually white, but sometimes verging to a rose colour; limb of calyx five-cleft, permanent; corolla rotate, subcampanulate, and tubular; berry ovate or globose, one-seeded from abortion, crowned by ten calycine teeth.

V. opulis.

1° VIBURNUM OPULIS. (*Linn.*)

English—Guelder Rose. | *German*—Schneeball.
French—Viorne Obier. | *Italian*—Viburno.

24

Specific characters.—A native of Europe and part of Asia, growing in moist hedges and swampy thickets, as a shrub, from six to twelve feet high, but larger in a cultivated state. Branches smooth, green; leaves bright green in summer, changing to a pink or crimson hue in autumn. They are broad, three-lobed, acuminate, unequally-serrated, veiny, beset with glands along the petioles; cymes pedunculate, white, with linear bracteæ; several of the marginal flowers dilated, flat, radiant, and without stamens or pistil; berries elliptical, bright red, very juicy, but bitter and nauseous. They are eaten in Sweden, and a spirit is distilled from them in Siberia. It is a handsome shrub, but may be trained to a low tree.

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XI. SAMBUCUS. (*Linn.*)

SAMBUCUS.

Cinchonal Alliance of Lindley; Nat. Ord. Caprifoliaceæ; Linn. Cl. 5, Ord. 3.

English—ELDER.	*Dutch*—VLIERBOOM.	*Russian*—BUSINA.
French—SUREAU.	*Italian*—SAMBUCO.	*Polish*—BEZ.
German—HOHLUNDER.	*Spanish*—SAUCO.	*Chinese*—U-CHU-YU.

Generic characters.—Calyx small, divided into five deep segments, permanent corolla rotate, urceolar, five-lobed; lobes obtuse; stamens five, about the length of the corolla; filaments awl-shaped; anthers roundish, heart-shaped; style none; stigmas three, obtuse; berry globular, pulpy, of one cell, containing three to five seeds, which are convex on the outside and angular inside.

1° SAMBUCUS NIGRA. (*Linn.*)

S. nigra.

COMMON ELDER.

25

Specific characters.—Leaves pinnate; leaflets usually five, smooth, deep green, ovate or oblong-oval, acuminated; the lower leaves sometimes trifoliate; cymes with five main branches; branches when a year old covered with smooth grey bark, and filled with a light spongy pith; flowers cream-coloured; berries globular, purplish black; stalks reddish. It is not indigenous to Britain though now very common. The fruit is used for making a sort of wine. The dried flowers make a fragrant kind of tea. The wood is hard and susceptible of a fine polish, and is used by the makers of combs and mathematical instruments instead of box and dogwood. The bark is also sometimes used as a dye. It attains to the height of from 20 to 30 feet.

XII. FRAXINUS. (*Tourn.*)

FRAXINUS.

Solanal Alliance of Lindley; Nat. Ord. Oleaceæ; Linn. Cl. 23, Ord. 2.

English—ASH.	*Italian*—FRASSINO.	*Polish*—JESION.
French—FRENE.	*Spanish*—FRESNO.	*Danish*—ASK.
German—ESCHE.	*Russian*—JAS.	*Portuguese*—FREIXO.
Dutch—ESCHEBOOM.		

Generic characters.—Flowers polygamous; calyx none, or four-parted, or four

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FRAXINUS.

toothed; corolla none; stamens two in the male flowers; anthers sessile or on short footstalks, dehiscing outwardly; female flowers each with a pistil that has a bifid stigma; fruit two-celled, compressed, winged at top; cells one-seeded; leaves compound, opposite, without stipules, deciduous, unequally pinnate; flowers in lateral racemes, greenish yellow. Trees, natives of Europe, Asia, and North America. The genus is supposed to consist of from 30 to 40 distinct species; all the species have a tendency to sport into varieties, and the probability is, that there are not above 15 or 20 real species.

F. excelsior.

1° FRAXINUS EXCELSIOR. (*Linn.*)

TALL OR COMMON ASH.

26

Specific characters.—Leaflets almost sessile, lanceolate-oblong, acuminate, serrated, wedge-like at the base; flowers naked, in loose spikes; fruit obliquely emarginate at the apex; leaves five, or sometimes six pair of leaflets. Flowers are occasionally found on the same tree, only male, or only female, and sometimes hermaphrodite. Flowers in March and April. Seeds are ripe in October.

A large tree, from 40 to 80 feet in height, native of Britain and other parts of Europe, and very extensively cultivated in Scotland, being considered one of the most valuable of hard-wood timber-trees for general country purposes; is much used by carpenters, coach-builders, coopers, and manufacturers of agricultural implements; and although somewhat diminished in value since the general use of iron for machines, it still ranks next to the oak in importance and utility. Like the sweet chestnut this tree differs from most other timbers in being more valuable when of rapid growth; beams of fast-grown ash are found to bear the greatest weight of any European tree, the oak not excepted. It grows in a great variety of soils and exposures, but prefers a strong good loam with moderate moisture and shelter, on the northern slopes of hills or glens. The green wood is excellent for fuel, is greedily cropped by cattle in spring, especially deer, when it is found to contain a sweet, sugary, inflammable juice, which is pleasant to the taste. In the warm climate of the south of Europe it yields manna, and the bark is said to be tonic and febrifugal, and the leaves as cathartic as those of senna, producing an

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action upon the kidneys. Many other trees are improved by being grown along with it, especially the larch. FRAXINUS excelsior.

XIII. ORNUS. (*Pers.*) ORNUS.

Solanal Alliance of Lindley; Nat. Ord. Oleaceæ; Linn. Cl. 2, Ord. 1.

English—THE FLOWERING OR MANNA ASH.	*German* — DIE BLÜHENDE ESCHE.	*Portuguese*—ORNEIRO.
French — LE FRENE A FLEURS.	*Italian*—ORNO.	*Hebrew*—'OREN.
	Spanish—ORNO.	*Greek*—OREINE MELIA.

Generic characters.—Flowers hermaphrodite or of distinct sexes; calyx four-parted or four-toothed; corolla four-parted; segments long, ligulate; stamens with long filaments; stigma emarginate; samara one-celled, one-seeded, winged.

1° ORNUS EUROPÆA. (*Pers.*) O. europæa.

COMMON FLOWERING ASH.

Specific characters.—Leaves with three or four pairs of lanceolate or elliptic, attenuated, serrated, stalked leaflets, entire at the base, downy beneath; flowers greenish white; young branches purplish, with yellow dots; buds cinereous. 27

A spreading deciduous tree from the south of Europe, attaining the height of from 35 to 45 feet. Introduced in 1730. Flowers in May and June. Seeds ripe in October. Is a very handsome tree, producing flowers in great abundance The timber is much inferior to the common ash, being coarse and brittle. The manna of commerce is procured in great abundance from this species, being a juice which flows spontaneously from the tree, but is more copiously obtained by incision of the bark. There are several sorts of manna, viz., the Common Brown or Fat Manna, the Manna in Tear, and the Carulated and Flaky. This sweet gentle purgative may be given with safety to infants, and people of weak constitution. Dr Lindley says, "that the sweetness of the substance is not due to the presence of sugar, but to a distinct principle called Mannite, which differs from sugar in not fermenting with water and yeast."

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Arbutus.

XIV. ARBUTUS. (*Tourn.*)

Erical Alliance of Lindley; Nat. Ord. Ericaceæ; Linn. Cl. 10, *Ord.* 1.

English—Strawberry Tree. | *German*—Erdbeerbaum.
French—Arbousier. | *Italian*—Arbatro.

Generic characters.—Evergreen small trees or shrubs, natives of the south of Europe, Canary Islands, and North America, bordering Mexico and Chili, very handsome and hardy in this country. They are propagated by seeds, cuttings, or grafts, and grow in a mixture of loam and peat; calyx with five divisions; corolla hypogenous, globose, or ovate-campanulate, five-cleft, reflexed; stamens ten; ovary five-celled, each cell many-seeded; style simple; stigma obtuse; berries subglobose, granulate-tuberculed, five-celled; seeds angular, small, with a coriaceous cover.

A. Unedo.

1° ARBUTUS UNEDO. (*Linn.*)

English—Common Strawberry Tree. | *Spanish*—Madrono.
French—Arbousier Commun. | *Modern Greek*—Komaa.
German—Gemeiner Erdbeerbaum. | *Russian*—Ljesnaja Jablon.
Italian—Arbatro. | *Polish*—Jezowka Wloska.

28

Specific characters.—An evergreen tree, attaining above 20 feet in height, native of the south of Europe, and some parts of Asia and Africa adjoining the Mediterranean, forming usually a shrub when not trained otherwise, but only considered an ornamental plant in this country, and as such it is very valuable. In the countries along the Mediterranean, a sugar and a very good spirit are extracted from its berries. The bark is used by tanners, and the wood, which is white, hardy, and heavy, yields charcoal which is much valued. Branchlets clothed with glandular hairs; leaves oblong, lanceolate, glabrous, serrulated; flowers produced in autumn, bell-shaped, nodding, white, slightly tinged with red, which, together with its scarlet berries (the fruit of last year's flowers, now come to perfection), render the plant extremely handsome, especially at a time when all deciduous trees lose their foliage, or have already fallen into a dormant state.

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XV. RHODODENDRON. (*Linn.*)

RHODODENDRON.

Erical Alliance of Lindley; Nat. Ord. Ericaceæ; Linn. Cl. 10, *Ord.* 1.

English—RHODODENDRON. | *German*—RHODODENDRON. | *Russian*—PJANISCHNIK.
French—ALPEN-ROSE. | *Dutch*—ROOZELAAR. | *Tartarian*—SCHEI.

Generic characters.—Evergreen shrubs, sometimes arborescent, a few species epiphital, inhabiting the Alps of Europe and Middle Asia, as well as North America and the Indies and neighbouring islands; leaves alternate, entire, and showy; corymbose, terminal flowers of a red, yellow, purple, or white colour. Cultivated in sandy peat, rather moist, and propagated by seeds, layers, cuttings, and grafting.

1° RHODODENDRON ARBOREUM. (*Smith.*)

R. arboreum.

English—TREE RHODODENDRON. | *German*—BAUM ALPEN-ROSE.
French—RHODODENDRON D'ARBUSTE.

Specific characters.—Native of Nepal, on the mountains of Narainhetey, where it is called "booram" by the natives. Leaves lanceolate-acute, silvery beneath, tapering to the base; peduncles and calyxes woolly; segments of corolla two-lobed, with crenulately-curled margins; capsule ten-celled, tomentose. A most beautiful species, but requires the most sheltered situations in the lower temperatures of this country. Flowers various tints of scarlet, which are influenced in density by temperature and exposure. They are collected in heads terminating the branches, rendering the plant a most imposing object.

29

2° RHODODENDRON PONTICUM. (*Linn.*)

R. ponticum.

PONTIC RHODODENDRON.

Specific characters.—Native of Asia Minor, at Pontus, and the Caucasus, as well as Iberia and Gibraltar, forming a shrub about 10 feet in height, flowering in May and June. Leaves ovate-lanceolate, smooth on both sides, attenuated towards the thick petioles, of a wide lanceolate form, with a streak on the upper

30

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Rhododendron ponticum.

surface; corolla large, with ovate-acute or lanceolate segments, having a variety of colours, from purple to red and white, and intermediate tints. It is quite hardy in this country, and thrives best in somewhat moist situations, in peat or sandy loam. Generally employed in parks and pleasure-grounds for underwood, for which purpose it is very useful, besides being a most handsome flowering shrub, fit for any garden, especially its varieties, which are improved in tint by fecundation with other species of more brilliant colours.

Acer.

XVI. ACER. (*Linn.*)

Sapindal Alliance of Lindley; Nat. Ord. Aceraceæ; Linn. Cl. 23, *Ord.* 1.

English—Maple or Plane.	*German*—Ahorn.	*Italian*—Acero.
French—Erable.	*Dutch*—Ahorn.	*Spanish*—Arce.

Generic characters.—Calyx and corolla generally divided into five parts, or never more than nine or less than four; stamens varying from five to twelve; anthers two-lobed; carpels (usually known as keys) two, rarely three; leaves generally toothed and lobed; flowers greenish yellow; the tips of the wings of the keys of several species becoming red as autumn advances. The species are deciduous trees, natives of Europe and northern parts of America; some are also found in Asia, on the Himalayas. They are hardy in this country, and easily propagated by seed.

A. campestre.

1° ACER CAMPESTRE. (*Linn.*)

COMMON ENGLISH OR FIELD MAPLE.

31

Specific characters.—Leaves cordate, five-toothed lobes; anthers hairy between the lobes; capsules downy and spreading horizontally; racemes erect; wings of fruit much divaricated.

This tree is a native of England, but not of Scotland, and seldom attains to more than 20 feet in height. It is not planted in this country, except as an ornamental

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tree. It bears clipping well, and is consequently introduced in geometrical gardens, and for hedges. The wood, which is compact and finely veined, is used in France and other parts of the continent for furniture. It also makes excellent fuel and good charcoal.

ACER campestre.

2° ACER PLATANOIDES. (*Linn.*)

A. platanoides.

NORWAY MAPLE.

Specific characters.—Leaves smooth, cordate, and five-lobed; lobes acuminated, with coarse, few, acute teeth; corymbs stalked, erect, and, as well as the fruit, smooth; fruit with divaricated wings. 32

This tree was introduced during the last century, and now constitutes one of our most ornamental trees. The flowers are yellow and very fragrant. The leaves are smoother than the preceding species. The bark is of a reddish-brown. It attains a height of 60 or 70 feet, growing rapidly the first ten or twenty years. The wood is soft, but capable of a good polish, and looks well, being finely grained.

3° ACER PSEUDO-PLATANUS. (*Linn.*)

A. pseudo-platanus.

SYCAMORE, GREAT MAPLE, OR FALSE PLANE.

Specific characters.—Leaves palmate, smooth, with five acuminated unequally-toothed lobes; racemes compound and pendulous, with the rachis as well as filaments of stamens hairy; flowers in May and June, attains to 30 feet upwards, but seldom above 60. This tree has long been cultivated in Britain, as we have notice of it in Chaucer in the 14th century. We have, however, no distinct record of its introduction. 33

The wood is firm and of compact grain, does not warp or become worm-eaten; it is used for minor in-door articles, and usually brings a good price in the market, —from 2/ to 3/ per foot.

It is a remarkably hardy tree, growing in the most exposed situations, and is found well adapted for damp tenacious soils, and in the vicinity of sea-blast.

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Acer saccharinum.

4° ACER SACCHARINUM. (*Linn.*)

SUGAR MAPLE.

34

Specific characters.—Leaves cordate, smooth, glaucous beneath, palmately five-lobed; lobes acuminated, serrately toothed; corymbs drooping, on short peduncles; pedicels hairy; fruit smooth, with wings diverging.

This tree is a native of North America, and extensively cultivated for the sugar extracted from it. It is not much grown in this country, excepting as an ornamental tree: it attains the height of from 40 to 50 feet. The wood is not very durable, and when exposed to moisture is apt to decay. It is, however, frequently used for furniture, having a fine white silky lustre when polished.

A. striatum.

5° ACER STRIATUM.

STRIPED-BARKED MAPLE.

35

Specific characters.—Leaves cordate, three-lobed, acuminated, finely and acutely serrated; racemes pendulous, simple; petals oval; fruit smooth, with wings diverging.

This tree is also a native of America, and not much known in this country. The wood is finely grained and white, and used as a substitute for holly, by furniture-makers.

Æsculus.

XVII. ÆSCULUS. (*Linn.*)

Sapindal Alliance of Lindley; Nat. Ord. Sapindaceæ; Linn. Cl. 7, Ord. 1.

English—Horse Chesnut. | *French*—Marronier d'Inde. | *German*—Rosskastanie.

Generic characters.—Trees or shrubs, inhabiting Northern India and North America. Leaves opposite, petiolated, palmated, with five to nine leaflets; leaf-

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lets sessile, feathery-nerved, serrated, or petiolated; flowers produced in racemes or panicles, polygamous; calyx campanulate or tubulous, five parted or toothed, very small and unequal; corolla five-petalled; stamens six to eight; anthers two-celled, ovary roundish, trigonal, three-celled, with two ovules in each; capsule coriaceous, smooth or spiny, three-celled, or with one or two abortive; seeds singly or rarely two, large and globose; embryo without albumen, eared; cotyledons large, fleshy, and thick; plumule two-leaved. ÆSCULUS.

1° ÆSCULUS HIPPOCASTANUM. (*Linn.*) ÆSCULUS Hippocastanum.

English — COMMON HORSE CHESNUT.	*Dutch*—PAARDENKASTENGEBOOM.	*German*—GEMEINE ROSSKASTANIE.
French—MARRONIER D'INDE.	*Spanish*—ESCALO CASTANA DE CABALLO.	*Russian*—KONSKOI CASTAN.
Italian—IPPOCASTANO.		

Specific characters.—A native of the north of India, attaining above 60 feet in height, forming a pyramid, and certainly a very handsome ornamental tree for parks, avenues, &c. Leaves large, deep green, interesting at the time of development, which goes on in rapid process during the months of April and May. Shortly after the leaves have expanded, the flowers appear in beautiful spikes, white, with a red and yellow tint. Fruit ripens in September or October, and falls to the ground, and not eatable, though the bitterness, which renders them useless as food, can be extracted by chemical processes, and then, when reduced into flour and mixed with wheat-flour for bread, &c., is agreeable to the taste, and very nutritious. This tree is propagated by the seeds, which must be sown at the time, or soon after they have fallen to the ground, first in rows, and transplanted when they have attained a desirable size. It is of rapid growth, and comes to greatest perfection in deep dry loam, and situations sheltered from wind, which easily injures the leaves and young shoots. In regard to hardiness, it will stand the severest winters in any part of Britain. The wood is white and soft, but answers well for making packing-cases, and other minor purposes requiring less strength and resistance in regard to the action of the atmosphere. 36

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Pyrus.

XVIII. PYRUS. (*Lindl.*)

Rosal Alliance of Lindley; Nat. Ord. Pomaceæ; Linn. Cl. 12, *Ord.* 2.

Generic characters.—Calyx with one urceolate tube and five-lobed limb; petals roundish; styles usually five, sometimes two to three; fruit or pome closed, five-celled; putamen cartilaginous; seeds two in each cell; testa cartilaginous; leaves simple, alternate, stalked, entire, serrated or pinnately divided; flowers numerous, in cymes; bracts awl-shaped, deciduous.

Low trees and sometimes shrubs, deciduous or evergreen, natives of Europe, Asia, and North America. One of the most important families in the vegetable kingdom, in temperate and transition climates, for their fruits, and have been for ages extensively cultivated and highly esteemed.

P. aucuparia.

1° PYRUS AUCUPARIA. (*Gærtn.*)

English—Fowler's Service, or Mountain Ash. | *German*—Vogelbeere.
French—Sorbieux des Oiseaux. | *Italian*—Sorbo Salvatico.

37

Specific characters.—Buds softly tomentose; leaflets serrated, slightly glabrous; pomes globose.

Tree 30 to 35 feet in height, with deciduous leaves, very generally distributed all over Europe. Flowers white, in May. Fruit red, ripe in September. Very hardy, growing, even at elevations of 2000 to 3000 feet, very rapidly for the first four or five years, after which it forms a somewhat rounded head. It does not bear lopping. Grass grows well under its shade. The wood is fine-grained, hard, and capable of being polished; may be stained any colour; is used in making handles of knives, musical instruments, and articles of turnery. The fruit is dry, and abounds in malic acid. In Sweden and the north of Europe, a spirit is made from the berries, which, in times of scarcity, have also been dried and ground as a substitute for flour.

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XIX. CRATÆGUS. (*Linn.*)

CRATÆGUS.

Rosal Alliance of Lindley; Nat. Ord. Pomaceæ; Linn. Cl. 12, Ord. 2.

English—THORN. | *German*—DER DORN. | *Italian*—CRATÆGO.
French—ALISIER. | *Dutch*—DOORN. | *Spanish*—ESPINO.

Generic characters.—Calyx with an urceolate tube and five-cleft limb; petals orbicular, spreading; ovarium two to five celled, styles two to five, glabrous; pome fleshy, ovate, closed, the teeth of the calyx containing a fleshy putamen; leaves simple, alternate, stipulate, deciduous or evergreen; flowers in corymbs, generally white but sometimes a rich pink; bracts subulate, deciduous; fruit red, yellow, or black.

1° CRATÆGUS COCCINEA. (*Linn.*)

C. coccinea.

English—SCARLET THORN. | *German*—SCHARLACHROTHE MISPEL.
French—NÉFLIER ÉCARLATE.

38

Specific characters.—A native of North America, from Canada to Carolina; arborescent, growing 15 to 20 feet high; leaves cordate-ovate, angled with lobes, acutely serrated, glabrous; petioles and calyxes pubescent, glanded; petals orbiculate; styles five; fruit scarlet, edible. Introduced to Britain in 1683, grows very rapidly, and forms a handsome small tree, with a spreading head, the breadth of which usually exceeds the height of the tree.

2° CRATÆGUS OXYACANTHA. (*Linn.*)

C. Oxyacantha.

English—HAWTHORN. | *German*—WEISSDORN. | *Italian*—BIANCO SPINO.
French—EPINE BLANCHE. | *Danish*—HAGETORN. | *Spanish*—ESPINO BLANCO.

39

Specific characters.—Leaves obovate, wedge-shaped, entire or trifid, glabrous, rather glossy corymbs of several flowers; sepals glandless, acute; styles one to three.

The common hawthorn is a native of Great Britain. In the wild state it is generally a shrub, but when planted in moderately rich soil, grows at the rate of from one to three and a half feet in the year, till it attains the height of 40 or even 50

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Cratægus Oxyacantha.

feet. It forms a fine umbrella-like head, the branches at length being spreading and gracefully pendulous, make it a very characteristic object in park scenery, planted either singly or in groups. The wood is very hard and difficult to work and liable to warp; it is, however, employed for mallets and teeth of mill-wheels, and emits a very powerful heat in burning, hence its general use in heating ovens when coals are scarce. The most important use, however, is as a hedge-plant, either in single or double rows, alone or mixed alternately with beech or privet. It forms a strong, durable, and efficient fence, known as "Quicks," or live hedges, in contradistinction to dead thorn hedges, made of the branches of the same plant for temporary fences or shelter, a practice now superseded by the use of netting and hurdles.

There are a great many varieties in cultivation, differing in the form and colour of the leaves, and the structure and colour of the flowers, some of which are beautifully double, others of the richest pink and rose colour.

C. punctata.

3° CRATÆGUS PUNCTATA. (*Ait.*)

DOTTED FRUITED THORN.

40

Specific characters.—Leaves obovate, wedge-shaped, glabrous, serrated; calyx villose; sepals awl-shaped, entire; fruit usually dotted. Spreading tree 20 to 30 feet high, introduced 1746; flowers white, May and June; fruit scarlet, but there are varieties with yellow and also purplish fruit. Common in the woods and swamps of Virginia and Carolina. The wood is so hard that the Indians use it for wedges for splitting other trees.

Amygdalus.

XX. AMYGDALUS. (*Linn.*)

Rosal Alliance of Lindley; Nat. Ord. Drupaceæ; Linn. Cl. 12, *Ord.* 1.

English—Almond.
French—Amandier.
German—Mandelbaum.
Dutch—Amandelboom.
Italian—Mandorlo.
Spanish—Almendro.
Russian—Mindalnoe derevo.
Chinese—Him bo gin.

Generic characters.—Flowers regular; calyx deciduous, five-lobed; petals and

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AMYGDALUS.

stamens arising from the calyx; style terminal; fruit a drupe, the nut two-ovuled, one and two seeded; leaves feather-nerved, undivided, serrate, with the lower serratures or the petioles glanded; stipules not attached to the petiole; covering of the nut not very fleshy, the surface downy; nut even or perforated with little holes; young leaves folded flatwise; flowers sessile, solitary, protruded before the leaves.

A. communis.

1° AMYGDALUS COMMUNIS. (*Linn.*)

41

Specific characters.—Leaves oblong, lanceolate, serrulate; calyx bell-shaped; fruit compressed and rather egg-shaped.

This tree was introduced from Asia in 1538, and is generally cultivated for its flowers. The wood is very hard and of a reddish colour, used for veneering and the handles of tools. The fruit is well known; it also yields gum and oil, and a considerable quantity of hydrocyanic acid. The almond is also used by nurserymen as stocks for grafting peaches and apricots. In this country the almond is found to succeed best on a free soil not over moist. The situation should not be exposed to high winds, as the branches are apt to be broken off. It attains the height of from 20 to 30 feet under favourable circumstances.

PRUNUS.

XXI. PRUNUS. (*Linn.*)

Rosal Alliance of Lindley; Nat. Ord. Drupaceæ; Linn. Cl. 12, *Ord.* 1.

English—PLUM.	*Dutch*—PRUIMBOOM.	*Arabic*—BARKUK.
French—PRUNIER.	*Italian*—PRUGNO.	*Russian*—SLIWNIK.
German—PFLAUMENBAUM.	*Portuguese*—AMEXIEIRA.	*Polish*—SLIWINA.

Generic characters.—Drupe ovate or oblong, fleshy, quite glabrous, covered with a kind of glaucous bloom, containing a compressed nut, which is acute at both ends, and a little furrowed at the margin, the rest smooth; leaves convolute when young; flowers usually disposed in umbellate fascicles, solitary on the pedicels, rising either after or before the leaves.

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Prunus domestica.

1° PRUNUS DOMESTICA. (*Linn.*)

CULTIVATED PLUM.

42

Specific characters.—Branches spineless; flowers mostly solitary; leaves lanceolate-ovate, concave on the surface, not flat.

This plant has long been cultivated in Britain, but is not indigenous. The use of the fruit in domestic economy is well known. The wood is very hard, and not so liable to crack as the preceding species. Susceptible of a fine polish, the colour being brought out by washing in lime water. It is sought after on the continent by furniture and musical instrument makers. It is not grown in this country excepting for the fruit.

P. spinosa.

2° PRUNUS SPINOSA. (*Linn.*)

English—Sloe. | *German*—Schlehe.

43

Specific characters.—Branches spiny; leaves obovate, elliptical, or ovate; downy beneath, doubly and sharply toothed; flowers produced before the leaves develope, and are white and solitary; calyx campanulate, with lobes blunt and longer than the tube; fruit globose.

This plant is a native of Britain, and generally over Europe and Asia, usually growing in hedge rows. It seldom attains to a greater height than 20 feet. The uses of the fruit are well known. The wood is hard and very heavy, and takes a fine polish, but, being apt to crack, is not much esteemed. The upright shoots make excellent walking-sticks, the bark being of a fine dark colour, smooth, and requiring no polish.

Cerasus.

XXII. CERASUS. (*Linn.*)

Rosal Alliance of Lindley; Nat. Ord. Drupaceæ; Linn. Cl. 12, *Ord.* 1.

Generic characters.—Drupe globose or umbilicate at the base, fleshy, quite

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glabrous, destitute of bloom, containing a smooth rather globose compressed stone. Leaves, when young, conduplicate; flowers white; pedicels one-flowered, rising before the leaves in fascicled umbels from scaly buds, but sometimes rising, after the evolution of the leaves, in racemes from the tops of the branches. CERASUS.

1° CERASUS LUSITANICA. (*Ivis.*) C. lusitanica.

English—PORTUGAL LAUREL. | *French*—LAURIER DU PORTUGAL. | *Portuguese*—AZARREIRO.

Specific characters.—Leaves evergreen, coriaceous, ovate-lanceolate, serrate, glandless; racemes upright, axillary, longer than the leaves. Introduced from Portugal in 1648, and cultivated as as ornamental shrub. The berries are greedily devoured by birds. The wood possesses no intrinsic value, and is merely exhibited to show the size to which the plant sometimes attains in this country. 44

2° CERASUS PADUS. (*Dec.*) C. padus.

English—BIRD CHERRY. | *French*—MÉRISIER A GRAPPES. | *German*—TRAUBEN KIRSCHE.

Specific characters.—Leaves ovate-lanceolate, somewhat acuminate, thin, serrulate, with the teeth rather spreading; racemes long, leafy; fruit round, bitter; indigenous to Britain and all over the northern parts of Europe and Asia. It does not attain to a great size, from 10 to 20 feet usually when well treated, and having a trunk of about a foot in diameter. The wood is hard and yellowish, and is sought after by cabinetmakers, who increase its beauty by cutting it diagonally. 45

The fruit though nauseous in itself, is used to give flavour to some kinds of brandy.

3° CERASUS SYLVESTRIS. (*Bauh. and Ray.*) C. sylvestris.

English—WILD CHERRY. | *French*—MERISIER. | *German*—SUSSE KIRSCHE.

Specific characters.—Branches vigorous and divaricate, the buds from which the fruits are produced oblong-acute; flowers in umbel-like groups, sessile, not 46

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Cerasus sylvestris.

numerous; leaves ovate-lanceolate, pointed, serrated, somewhat pendent, slightly pubescent on the under side, and furnished with two glands at the base; the nut is oval and firmly adheres to the flesh, which is deep dark red. It is indigenous to Britain, and in fine dry soils and sheltered situations attains to upwards of 40 feet in height. The flowers are produced in April, and fruit in June and July.

The uses of the fruit are well known. The wood is firm, strong, and close-grained, and of reddish colour, and is much sought after by cabinetmakers, especially on the Continent, where mahogany is scarce.

C. vulgaris.

4° CERASUS VULGARIS. (*Mill.*)

English—Common Cherry. | *French*—Cerisier. | *German*—Sauer Kirsche.

47

Specific characters.—Tree small; branches spreading; flowers in subsessile umbels, not numerous; leaves ovate-lanceolate, toothed, glabrous. The flowers are smaller than the preceding. The fruit is round, melting, full of watery sap. The skin varies in colour from light to dark red.

It has been long cultivated in Britain, but never found in a wild state, and the aboriginal form is unknown. It does not grow so high as the Gean, and is only cultivated for its fruit in this country.

Cytisus.

XXIII. CYTISUS. (*Linn.*)

Rosal Alliance of Lindley; Nat. Ord. Fabaceæ; Linn. Cl. 16, *Ord.* 6.

English—Cytisus. | *French*—Cytise. | *German*—Bohnenbaum.

Generic characters.—Calyx bilabiate, upper lip entire, lower one tridentate; vexillum ovate, large, carina very obtuse; legume compressed, many-seeded, and glandless; flowers of nearly all the species yellow. Leaves trifoliate.

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1° CYTISUS ALPINUS. (*Mill.*)

Cytisus alpinus.

English—ALPINE OR SCOTCH LABURNUM. | *German*—ALPEN BOHNENBAUM.
French—CYTISE DES ALPES OU L'AUBOURS. | *Italian*—MAGGIO PENDOLINO.

48

Specific characters.—Branches glabrous and terete; leaves petiolate; leaflets ovate-lanceolate, rounded at the base; racemes pendulous; pedicels and calyx puberulous; legumes glabrous, few-seeded, marginate. This tree is not indigenous to Scotland, as supposed by many; it was probably introduced about the same time as the preceding. The flowers are more ornamental than the common. The properties and uses are the same as the common laburnum.

2° CYTISUS LABURNUM. (*Linn.*)

C. Laburnum.

English—LABURNUM. | *French*—ARBOIS COMMUN. | *German*—GOLDREGEN.

49

Specific characters.—Branches terete, whitish; leaves petiolate; leaflets ovate-lanceolate, pubescent beneath; racemes pendulous, simple; pedicels and calyx clothed with closely pressed pubescence; legume linear, many-seeded, also clothed with closely pressed pubescence.

This tree is not a native of this country, but has been cultivated since 1596. It attains to about 20 feet in height. Every one is familiar with the fine yellow pendulous flowers with which it is adorned in the spring. The wood is very hard, finely grained, susceptible of a beautiful polish, and well worthy of more attention from cabinet-makers, which an examination of the specimen in the Collection will sufficiently prove.

3° CYTISUS SCOPARIUS. (*Link.*)

C. scoparius.

English—COMMON BROOM. | *French*—GENET À BALAIS OU GENET COMMUN. | *German*—GEMEINER PFRIEMEN-STRAUCH.

50

Specific characters.—Branches angled, glabrous; leaves petioled, trifoliate, the

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Cytisus scoparius.

uppermost simple; these and the leaflets oblong; flowers axillary, pedicelled, solitary; legumes pilose at the margins.

We have noticed this before among the Herbage and Forage Plants. We introduce it here in regard to its wood, which, however, is not valuable, and is rather exhibited to show the size and strength to which the plant will sometimes attain in this country. Our specimen was grown at Clathick, in Perthshire.

Robinia.

XXIV. ROBINIA. (*Linn.*)

Rosal Alliance of Lindley; Nat. Ord. Fabaceæ; Linn. Cl. 17, *Ord.* 4.

LOCUST TREE.

Generic characters.—Trees or shrubs indigenous to North America, producing valuable timber, and highly ornamental plants; branches brittle, often spiny; leaves impari-pinnate, with white or rose unattached stipules; leaflets stipulated; flowers arranged on axillary pendulous racemes; calyx urceolate, campanulate, nearly two-lobed, the upper being truncate or emarginate, bidentate, the lower trifid; lobes acute; corolla papilaceous, upper part orbiculose, reflexed, outstanding; the lower part, the wings free, and the keel bicipitate; stamens ten; ovary stipitate; style threadlike, pubescent; stigma obtuse or urceolate; pods stipulated, elongate, compressed, having the seeds on the margins of the valves; seeds reniformed.

R. Pseudacacia.

1° ROBINIA PSEUDACACIA. (*Linn.*)

English—False or Thorn Acacia, or Locust Tree.
German—Gemeine Acacia.
French—Robinier fausse Acacia, ou Acacia Blanc.
Italian—Falsa Acacia.

51

Specific characters.—This tree is a native of North America, attaining from 70 to 80 feet in height, by 2 to 3 feet in diameter; but, on account of the crooked

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ROBINIA Pseudacacia.

stem, less adapted for boards and carpentry. The wood is usually of a greenish yellow, marked with dark veins, and is hard, compact, durable, and susceptible of a high polish. The low and more equal temperature in Great Britain is not sufficient to start it during the comparatively short summers, to such a size and perfection of annual growth as to render it of much value as a timber tree. It is a much-branched tree, having the branches as well as the trunk somewhat twisted; bark rough, deeply furrowed on the trunk; lower branches horizontal-spreading, upper ones more ascending the nearer the top; they have strong hooked prickles; leaves pinnate; leaflets opposite, with one terminating, sessile, smooth; flowers produced in pendulous bunches, white or yellowish, very agreeably fragrant, developing narrow flat pods, about three inches in length, each containing five or six seeds of a blackish brown. The mode of propagation is by seeds, which grow readily; seedlings are of rapid growth, and as they shoot very early in spring, are often injured by frost. It grows in a variety of soils if not too wet and cold.

XXV. CARAGANA. (*Linn.*)

CARAGANA.

Rosal Alliance of Lindley; Nat. Ord. Fabaceæ; Linn. Cl. 17, *Ord.* 4.

SIBERIAN PEA TREE.

Generic characters.—Trees or shrubs, natives of Siberia, bordering the middle of Asia; leaves impari-pinnate, leaflets mucronate, and the petioles either with a bristly or spiny point; the flowers axillary, each on a distinct pedicel, usually several together, pale yellow, rarely white, and then tinged with red; calyx tubulous, five-toothed; petals equal; stamens ten; ovary sessile, many-ovuled; legumes (pods) sessile, rather compressed, somewhat cylindrical, many-seeded; seeds subglobose. All the species are ornamental and curious, and flower early in spring.

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Caragana arborescens.

1° CARAGANA ARBORESCENS. (*Lam.*)

English—Arborescent Siberian Pea Tree. | *French*—Fausse Acacia de Sibérie. | *German*—Sibirischer Erbsenbaum.

52

Specific characters.—Native of Siberia, in woods and along the banks of rivers. An erect, stiff tree, attaining to about 18 feet, but in dry airy places usually a mere shrub; branches upright-growing; flowers axillary, on one pedicel; pods oblong, tapering, each containing three or four seeds; wood hard, compact, and very tough, yellow on the outside, and waved and striped with red and reddish brown within. Seeds are given as food to poultry, and the leaves are an excellent fodder for cattle. This tree was introduced to Britain in 1752, and is now quite common.

Ilex.

XXVI. ILEX. (*Linn.*)

Gentianal Alliance of Lindley; Nat. Ord. Aquifoliaceæ; Linn. Cl. 4, Ord. 3.

English—Holly. | *Dutch*—Schubbig Hard-kelk. | *Spanish*.—Acebo.
French—Le Houx. | *Italian*—Agrifolio. | *Russian*—Padub.
German—Stechpalme.

Generic characters.—Calyx four to five toothed, permanent; corolla four to five cleft, subrotate; stamens four to five, alternating with the segments of the corolla; ovary sessile; stigmas four; berry four to five nuts; leaves simple, alternate, without stipules, evergreen, coriaceous, serrated or quite entire.

I. Aquifolium.

1° ILEX AQUIFOLIUM. (*Linn.*)

53

Specific characters.—Leaves oblong, shining, wavy, spiny-toothed; pedunclos axillary; flowers umbellate.

A somewhat conical evergreen tree, 20 to 30 feet high, indigenous to Britain.

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The wood is as white as ivory, very hard, fine grained, and susceptible of a high polish, and may be dyed almost any colour; employed for many purposes in joinery and turnery, mathematical instrument-making, and engraving. The bark affords bird-lime; and the leaves were at one time popular in medicine for the cure of intermittent fevers, and said to be a preventative of gout. The holly makes the most ornamental and impenetrable of all hedges, and will live and keep healthy to a great age. ILEX Aquifolium.

XXVII. JUNIPERUS. (*Linn.*) JUNIPERUS.

Class Gymnogens of Lindley; Nat. Ord. Abietineæ; Linn. Cl. 22, Ord. 13.

JUNIPER.

Generic characters.—Scales of the male catkins subpeltate, corolla and calyx wanting; stamens from four to eight; anthers celled; scales of the female catkins few, united, fleshy, and forming a globular, generally three-seeded berry.

1° JUNIPERUS VIRGINIANA. (*Linn.*) J. virginiana.

English—RED CEDAR OR VIRGINIAN JUNIPER. | *German*—VIRGINISCHER WACHHOLDERBAUM.
French—GENEVRIER DE VIRGINIE OU CEDRE ROUGE.

54

Specific characters.—A valuable timber tree in its native country, North America, occurring between the 40° and 50° lat., a distance more than 3000 miles. It attains the greatest perfection in maritime districts, and becomes scarcer and less vigorous farther inland. It grows from 40 to 50 feet in height, with a trunk from 1 to 1½ feet in diameter, having numerous and close horizontal branches from the base. The wood is esteemed for its strength and durability, and preferred to any other kind in its native country for rural purposes. The heart-wood is of a beautiful red, while the sap-wood is white; much used for all kinds of carpentry, water-pipes, &c., and imported to this country for making black-lead pencils,

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Juniperus virginiana.

though the Bermudas cedar wood is preferred for that purpose. Leaves opposite, often ternate, needle-pointed, awl-shaped, scale-like, rather spreading, of a more or less dark green, often with a pale to deep glaucous hue, influenced by different situations, often turning brown by frost and exposure, especially those on the extremities of the young shoots. Berries ovate, smooth, or tuberculed. In this country it has been, as yet, only regarded as an ornamental evergreen, and is to be met with in almost every cottage garden, forming a dense handsome bush, or small close-branched tree.

Taxus.

XXVIII. TAXUS. (*Linn.*)

Class Gymnogens of Lindley; Nat. Ord. Abietineæ; Linn. Cl. 22, Ord. 13.

YEW TREE.

Generic characters.—Flowers of the male plants each a four-leaved or parted perianth, united at the base; stamens numerous; anthers peltate, six to eight celled. Female flowers also four-leaved, pitcher-shaped; seed or stone one, in a fleshy drupe or berry, perforated at the end and scaly at the base.

T. baccata.

1° TAXUS BACCATA. (*Linn.*)

English—Common Yew. | *Italian*—Tasso. | *Spanish*—Texo.
French—If. | *German*—Eibenbaum. | *Russian*—Tis.

55

Specific characters.—Indigenous to Europe, the Caucasus, and the Indian mountains. It occurs on the Pyrenees and the Alps at an elevation of 1000 feet; on the Apennines, at 2000 feet; and is very frequent in Britain, and even in Scandinavia, to the 61° lat. It attains from 30 to 40 feet in height, by sometimes 9 feet in diameter. Branches spreading, crowned by a peak-like top which rises above the dense umbrageous foliage; branches heavily laden with drooping, sombre-green leaves, the lowermost often pendent, the upper ones usually ascending in a curved manner; leaves linear, falcate, pointed, slightly revolute at the

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margins. They are, like others of the same order and tribe, poisonous to some kinds of cattle. Fruit drooping, surrounded, though unconnected, to near the point (which is free) by the scarlet fleshy disk, the latter of which is eagerly sought for by birds. The wood is very hard, fine, and close-grained, flexible, elastic, almost imperishable, of a fine orange-red or deep-brown, and greatly valued by turners and cabinetmakers, and, formerly, for the making of bows; generally preferred to any other kind, for fencing and other rural uses, when required to resist wet or the inclemency of the weather. TAXUS baccata.

XXIX. CUPRESSUS. (*Linn.*) CUPRESSUS.

Class Gymnogens of Lindley; Nat. Ord. Abietineæ; Linn. Cl. 21, *Ord.* 10.

CYPRESS.

Generic characters.—Flowers in different branches, monœcious; male flowers terminating on the branchlets, cylindrical; stamens decussate, opposite, fourfold, four-celled; female flowers solitary, terminating, subglobose; bud-scales six to eight, inserted decussately on the axis, the upper base swollen, the lower detached, spreading; cones with woody peltate scales; seeds numerous, inserted on the upper interior surface of the scales. Evergreen, inhabiting the shores of the Mediterranean, Northern India, and Central America; branches horizontal or fastigiate; leaves persistent for five years; decussate, closely imbricate, scale-formed, coriaceous, often marked with a gland on the back.

1° CUPRESSUS SEMPERVIRENS. (*Mill.*) C. sempervirens.

English—UPRIGHT EVERGREEN OR ITALIAN CYPRESS. *French*—CYPRES. *German*—CYPRESSE. *Italian*—CIPRESSO. *Portuguese*—CIPROSTE. *Hungarian*—CYPROS.

Specific characters.—A native of Greece and Asia Minor, and cultivated in all the countries along the Mediterranean. It was much esteemed by the antient 56

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Cupressus sempervirens.

Greeks and Romans as a well-adapted ornament for cemeteries, and equally as a timber-tree, for its wood is almost imperishable. It will attain 50 to 60 feet; but from 30 to 40 feet is the maximum height in this country, to which is was introduced in 1548. It forms a tapering, conical tree, with strict branches, closely lying to the stem. Branchlets tetragonal, clothed with obtuse, adpressed leaves. Cones globose-ovate, with slightly-knobbed scales. Somewhat resembles the Lombardy poplar in shape but is still much more compact, which gives it an artificial appearance.

C. thyoides.

2° CUPRESSUS THYOIDES. (*Linn.*)

English—White Cedar. | *German*—Nord-Americanische Cypresse.
French—Cedre Blanc.

57

Specific characters.—This tree is indigenous to east North America and southern Canada, in the 35° latitude, attaining from 70 to 80 feet in height, by 2 to 3 feet in diameter. It grows naturally in swamps, forming impenetrable thickets, and is usually destitute of branches for three-fourths of its height. Branchlets compressed, crowded on the extremities of the branches. Leaves four-rowed, imbricated, rather glaucous, assuming a brownish tint during winter, especially at the extremities of the shoots. Bark on young trees thin, but thick and reddish brown on adult trees, similar to that of an old vine. Wood light, soft, easily to be worked, of an aromatic odour, and receives a rosy tint when exposed to the atmosphere. It is perfectly hardy in this country, and a handsome ornamental tree.

Thuja.

XXX. THUJA. (*Linn.*)

Class Gymnogens of Lindley; Nat. Ord. Abietineæ; Linn. Cl. 21, *Ord.* 10.

English—Arbor Vitæ. | *German*—Lebensbaum.
French—Arbre de Vie. | *Italian*—Albero de Vitæ.

Generic characters.—Male inflorescence in a small imbricated catkin, each

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flower having four petals and four anthers, with a calyx composed of a single scale at the base; female in a cone-like catkin; corolla none; seeds winged or wingless. Evergreen. THUJA.

1° THUJA OCCIDENTALIS. (*Linn.*) T. occidentalis.

English—AMERICAN ARBOR VITÆ. | *German*—AMERICANISCHER LEBENSBAUM.
French—CEDRE AMERICAIN. | *Italian*—ALBERO DE VITÆ.

Specific characters.—A native of North America, from Canada to the mountains of Carolina and Virginia. In the southern districts it forms a tree of from 30 to 50 feet in height, with a trunk from 12 to 15 inches in diameter, but is reduced gradually to a shrub to the northward. It covers large tracts, and usually found in swampy situations, which are only accessible during winter, when frozen. Generally branched from the base, often dividing into several stems near the ground. Branches slender, with numerous, stiff, two-edged branchlets; leaves four-rowed, imbricate, ovate-obtuse; those on the sides of the branches navicular, clasping, but convex, adpressed on the upper and under surface, with a tubercular gland near their extremity; cones small, ovate, inclining, produced on the points of the branchlets. Compared with the Chinese arbor vitæ, this species differs in branching horizontally, and in having a more loose and irregular head. The wood is red, somewhat odorous, light and soft, fine-grained, used for a variety of purposes in its native country. In England it is only planted for ornament, and as such, very useful. 58

XXXI. PINUS. (*Linn.*) PINUS.

Class Gymnogens of Lindley; Nat. Ord. Abietineæ; Linn. Cl. 21, *Ord.* 10.

THE PINE.

Generic characters.—Male flowers in roundish or oblong cylindrical catkins; anthers two-celled; female, bipid or trifid; cones with coriaceous or woody scales,

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Pinus. equal at the point or swollen, persistent or more rarely detaching from the axis, with a hollow at their base, in which the seeds are deposited; seeds at the base of the scales by two together, either winged or wingless; cotyledons from three to ten, linear, germinating above ground; leaves either flat or tetragonal, singly or in bundles, or trigonal, acicular, in sheaths by two to six together; perennial, rarely annual.

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§ Tsuga.

1° *TSUGA.*

Pinus canadensis.

(*a*) PINUS CANADENSIS. (*Linn.*)

English—Canadian or Hemlock Spruce. | *French*—Sapin du Canada. *German*—Schirling's Tanne.

59 *Specific characters.*—Tree rather above the medium size; branches numerous, large, and slender, forming a massy rather irregular conical or pyramidal head; bark light coloured and smooth, except when very old; leaves pretty regularly distich or pectinate, broad, flat, about half an inch in length, serrated or rough at the edges, of a very light vivid green colour, with two silvery stripes underneath; male flowers few together, forming a small head on a long footstalk; cones pendulous on the extremities of the branchlets, nearly an inch in length, and of a light brown colour when ripe; scales few, roundish, smooth, and entire on the margins; seeds small, light brown coloured; wings nearly white. Native of North America.

The Canadian or hemlock spruce is very abundant in the natural forests of North America. It is found as far north as the 51° of latitude, in the vicinity of Hudson's Bay, but is most plentiful in the districts near Quebec; farther south it becomes more rare, and, on the Alleghany, only occupies the higher grounds. Although generally found growing with the Black Spruce, the Canadian universally attains its greatest height (70 or 80 feet) on soils which seem rather dry for the former, or where it assumes a somewhat stunted appearance. The

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Canadian spruce, however, attains large dimensions on the banks of rivulets, and where the moisture is not stagnant. The timber is of little use, being very much given to warp, and when of great dimensions, the concentric circles are often separated at intervals, forming what are termed shakes, from the immense influence which the wind has in bending and twisting trees with such large dense tops; the bark, however, is nearly if not altogether equal to that of the oak for tanning leather, and is extensively used in some parts of America for that purpose. In this country the Canadian spruce is only of importance as an ornamental tree, for which it would doubtless be more valuable if raised always from seed, instead of cuttings or layers, as such form more perfect plants.

PINUS canadensis.

2° *ABIES.*

§ ABIES.

(*a*) PINUS ABIES. (*Duroi.*)

PINUS Abies.

English—COMMON SILVER FIR. | *Italian*—ABETO.
French—SAPIN COMMUN. | *Greek*—ELATA.
German—WEISS ODER EDEL-TANNE. | *Hungarian*—LUTZFENNGO.

60

Specific characters.—Tree tall, pyramidal, branches diverging horizontally from the trunk, and in regular verticils or whorls; bark smooth and light coloured; leaves fully more than an inch long, pectinate, smooth, flattened, dark green, with two silvery channels on the under side, one deep central channel on the upper, and rounded or almost imperceptibly indented at the point; male catkins shortly cylindrical, and stalked; cones on the upper branches erect, generally of a purplish colour, but in some varieties white, four to six inches in length by fully one in diameter, cylindrical; scales very broad, rounded, and incurved at the external edge, toothed at the sides, and having their long pointed persistent bracteæ produced considerably beyond their points, deciduous or falling off when ripe; seeds fully a third of an inch in length, irregularly triangular, somewhat wrinkled, and nearly surrounded by their persistent, shining, brownish purple pericarp, to which

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Pinus Abies.

is generally attached a small portion of the wing; cotyledons four or five. Grows naturally on mountains in Europe and the North of Asia, at altitudes immediately under what is termed the zone or range of *P. sylvestris*.

The common silver fir succeeds best in this country on deep rather superior soils, and especially in such as are of a damp nature, as in glens at the base of mountains or rising grounds, &c., but is very impatient of the sea breeze. Its timber is rather soft, and not of long duration, therefore not held so much in repute by carpenters, nor imported to the same extent as that of the common or Norway spruce. It is, however, a very ornamental and free-growing tree when planted on a suitable soil. From the silver fir the Strasburg turpentine is derived, which is considered superior to all the other substitutes for the true turpentine of *Pistachia Terebinthus*. This liquid resin is obtained in small quantities by making incisions in the bark, but chiefly from small vesicles under the bark; and the collecting of this substance forms a considerable branch of business to the natives, in some of the central districts of Europe, who climb the highest trees by means of cramp-iron fixed to their shoes, provided with a small hook to pierce the vesicles, and a bottle slung to their waist for containing the juice.

P. balsamea.

(*b*) PINUS BALSAMEA. (*Linn.*)

English—Balm of Gilead or American Silver Fir. | *French*—Sapin Baumier. *German*—Balsam Tanne.

61

Specific characters.—Tree medium sized; branches nearly horizontal, but more aspiring than those of the common silver fir, and forming a narrower pyramidal head; bark on the trunk generally thickly interspersed with little elevated vesicles, containing a clear limpid resin; leaves shorter, narrower, lighter green, and less silvery on the under side than those of the common silver fir, compared with which the male catkins are also more numerously crowded round the shoots of the preceding season, and more persistent; cones also of a deeper purple colour, more swollen in the middle, tapering to both ends, furnished with short and blunter

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PINUS balsamea.

pointed bracteæ, and generally having at least one side sprinkled with white resin, which exudes from the point; seeds also nearly similar in shape, but not more than half the size of those of the common silver fir. Native of the northern provinces of North America.

In its native country, according to Michaux, the *P. balsamea* does not grow in masses like many others of the American pine and fir trees, but is found scattered amongst black and hemlock spruces, and chiefly on the colder sides of mountains, in rather cold, moist, inferior soils, composed of clay and gravel. It seldom attains to more than 40 feet in height, and its timber is light, soft, and even inferior to the silver fir. In this country the balm of Gilead fir often perishes when under twenty or twenty-five years of age; the symptoms of its decay are a seemingly overflow of sap, and overswelling or thickening of the terminal shoots, which may probably arise from being generally planted on too rich soils, and in too warm situations. This species obtains the name of Balm of Gilead from a resin which is procured from it in the same manner as that of the silver fir, having a supposed resemblance to the true extract of that name, which is derived from the *Amyris Gileadensis*. In this country the liquid resin of the balm of Gilead fir is known by the name of Canada Balsam.

3° *PICEA.*

§ PICEA.

(*a*) PINUS ALBA. (*Ait.*)

PINUS alba.

English—WHITE AMERICAN SPRUCE. | *German*—AMERICANISCHE WEISS-TANNE.
French—SAPINETTE BLANCHE.

62

Specific characters.—Tree about the same size as the last, also of a pyramidal habit of growth; branches more horizontal; bark considerably lighter in colour; leaves also lighter, less crowded, and not so straight, nor terminated so abruptly at their point; male catkins pendulous, on long foot-stalks, and of a yellowish and

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Pinus alba.

brown colour; female catkins, or young cones, ovate and pendulous; ripe cones from one and a half to three inches in length, or nearly four times their greatest diameter, and of a light brown colour; scales thin, round, or bluntly pointed, and entire; seeds still smaller than those of the last species. Grows naturally on the same parts as *P. nigra*, but extends farther to the north, and does not succeed so well on a dry peaty soil. Introduced in 1700.

In the Appendix to Captain Franklin's Tour to the North Pole, by Dr. Richardson, he mentions *Pinus alba* as being the most northerly tree which came under his observation, and that the preceding was not observed at a higher latitude than 65°. Its wood is employed for the same purposes, although considered inferior in quality to that of *P. nigra*. The small root fibres are very pliable when macerated in water and deprived of their thin skin, and are used by the North American Indians for making ropes, as also for sewing their birch-bark canoes.

P. nigra.

(*b*) PINUS NIGRA. (*Ait.*)

English—Black Spruce.
French—Sapinette Noire.
German—Americanische Schwarz-Tanne.

63

Specific characters.—Tree medium sized, or about 50 feet in height, of a regularly conical habit of growth; branches regularly verticillate, horizontal, or declining next their base, and aspiring towards the extremities; branchlets also more regularly verticillate than those in the next two species; bark of the trunk and branches of a dark dusky-like colour; leaves thick set, and spreading regularly on all sides of the branchlets, scarcely half an inch in length, straight, rigid, terminated abruptly, and four cornered or angled, of a dark glaucous green colour, with two small silvery stripes on the exterior or under side, and two longer on the interior; male catkins cylindrical, erect, and stalked, about an inch in length, yellowish, with red-tipped anthers; female, or young cones, ovate, erect, and of a purplish colour, afterwards becoming pendulous, darker coloured, and, when arriving at maturity, changing to a dusky reddish brown, full size, about an inch and

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a half in length, and three-fourths of an inch in diameter at the middle; scales blunt, or rounded, and, when ripe, rugged or torn-like on their thin margins; seeds small, scarcely more than a line in length, and of a brownish colour. Grows naturally in North America, particularly between the 44° and 53° of latitude, on cold moist sand, or light soils, and is found to attain the greatest height, which is 70 or 80 feet, in valleys composed of deep black peaty soils. Introduced to Britain in the year 1700. PINUS nigra.

The wood of the black spruce is of a lightish red colour, strong, light, elastic, and in America much in repute for making top-masts and spars for ships; as also the lower portions of the trunk, and the larger roots, for forming knees of vessels, in districts where oak is scarce. It is also imported to this country and the West Indies, for making packing-boxes, herring-barrels, &c. It contains too little resin to be useful in the production of turpentine. The tops of the branches are employed in common with, but generally preferred to, those of the next two species, for making the essence of spruce, which is employed in the brewing of spruce beer. The black spruce will not succeed in dry warm exposures, and in this country should be chiefly planted on moist, peaty, or moorish soils.

(*c*) PINUS PICEA. (*Duroi.*) P. Picea.

English—COMMON OR NORWAY SPRUCE. | *French*—SAPIN EPICIA. | *Italian*—PESSO.
German—FICHTE ODER ROTH-TANNE. | *Swedish*—GRAU.

Specific characters.—Tree tall; branches verticillate, short, lower ones decumbent, and forming altogether a regularly pyramidal head; leaves of a grassy-green colour, generally under an inch in length, curved or bent, sharp-pointed, and more crowded together laterally, than on the upper and under sides of the branchlets; male catkins solitary, in pairs, or few together, about an inch in length, cylindrical, generally curved, of a yellowish colour tipped with red; young cones terminal, pendulous, and of a bright red or scarlet colour, when ripe still retaining the same 64

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Pinus Picea.

pendulous habit, of nearly a cylindrical shape, five to six inches long, and from one and a quarter to half an inch in diameter at the middle; scales of a rhomboidal-like shape, generally slightly incurved, and rugged or toothed at the exterior point; seeds very much resembling those of the wild pine, from which they are, however, easily distinguished, by being of a more uniform brown colour, and also by their being sharper pointed, and feeling much harder or rougher-like to the touch; cotyledons seven to nine. Native of Norway, and other countries in the north, both of Europe and Asia, where it abounds chiefly on deep mountain valleys and declivities exposed to the north, where the soil is humid, and rather of medium or light texture. Supposed to have been first introduced to Britain in 1548.

In those countries where the common spruce grows naturally, it attains a height of from 100 to 150 feet, and is supposed to require a century before it arrives at full maturity. Its timber is whiter, more elastic, less resinous, and consequently lighter, than that of *P. sylvestris*, and hence is preferred for the masts, yards of large ships, &c. When imported into this country from the north of Europe, it is known by the names of white-deal, white Baltic-deal, and white Christiania-deal. The true Burgundy pitch is obtained from the Norway spruce, by making incisions in the bark in the warmer part of the season, from which it distils and becomes consolidated, before falling to the ground; it is then scraped off, and afterwards strained under a press, through strong coarse cloths, into barrels for transportation. A medium-sized vigorous tree will, in one season, yield 30 or 40 pounds of juice. In Germany, and some other parts of the continent, where the culture of the Norway spruce is becoming a good deal attended to, the seeds are sown along with oats or barley, in the quantity of from two to four quarts or so to the acre, on ground where they are intended to stand, and which has been previously well prepared. The same method is also sometimes practised with the wild pine.

In some of the northern parts of Europe, immense havoc is made in Norway spruce and wild pine forests by the attacks of insects, chiefly of the beetle tribe, which introduce themselves into the cellular integument of the bark, in consequence

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of which the trees ultimately perish. The progress of the insects is only checked by felling and removing all the trees for a distance of 50 yards round the affected ones, and burning the branches on the ground.

PINUS Picea.

4° *LARIX.*

§ LARIX.

(*a*) PINUS LARIX. (*Linn.*)

PINUS Larix.

English—COMMON LARCH. | *French*—MELEZE. | *German*—LERCHENBAUM.
Italian—LARICE. | *Russian*—LISTVENIZA. | *Polish*—MODRZEW.

65

Specific characters.—Tree tall and of a conical or pyramidal form; branches subverticillate and spreading horizontally from the straight trunk, occasionally, however, rather pendulous, particularly when old; branchlets also more or less pendulous; leaves linear, soft, blunt, or rounded at the points, of an agreeable light green colour, single or fasciculated, in the latter case many together, round a central bud, spreading and slightly recurved; male catkins without footstalks, globular or slightly oblong, of a light yellow colour, and, together with the female or young cones, appearing in April and beginning of May, the latter varying from a whitish to a bright reddish colour; cones of an oblong ovate shape, erect, fully an inch in length, and of a brownish colour when ripe; scales persistent, roundish, striated, and generally slightly waved but not distinctly notched on the margin; bracteæ generally longer than the scales, particularly towards the base of the cones; seeds of an irregular or ovate form, fully an eighth part of an inch in length, and more than half surrounded by the smooth, shining, persistent pericarp; cotyledons five to seven.

Indigenous to central Europe, inhabiting the mountain chains from the Alps in Switzerland to the Ural in Russia, at an elevation of from 3000 to 5000 feet. One of the most important forest trees in this country, on account of its rapid growth and quality of timber. It attains in Scotland a height of from 20 to 25 feet in 10 years, and comes to maturity, according to the nature of the soil, in

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Pinus Larix.

about 40 to 60 years, reaching upwards of 100 feet in height, by 10 to 12 feet in diameter, but will live double that age. In its native country it is mostly found on the northern slopes of hills, and delights in a moderately moist soil; but in Scotland it will grow in a great variety of soils, when well drained, with a free circulation of air, and in all exposures. A considerable difference exists in the growth and habits of trees raised from native and continental seed. The former is best adapted for high situations, whereas the latter is of faster growth, and produces the finest timber. The trees raised from continental seed, generally called Tyrolese, are rather more liable to be injured by late spring-frosts, on account of their early growth. Introduced to Britain in 1629.

The quality of the timber of the common larch, and the uses to which it is in this country applied, are too well known to require any particularization. The resinous matter which flows from the trees through holes pierced in the bark and sap-wood, is known in the shops of this country under the name of Venice Turpentine. In Russia a gum, known by the name of *Gummi Orenburgense*, which issues forth during the combustion of the medullary part of the trunks when the forests are burned, which often takes place either from accident or intentionally, during the warmer summer months, and which is very glutinous and possessed of a sweet pleasant taste, is used as a substitute for Gum Arabic, and also as food. A kind of manna, *Manne de Breançon*, of the French shops, is collected from the leaves and points of the young shoots of the larch in the mornings before it becomes dissipated by the rays of the sun; and a globular-shaped kind of mushroom, known by the name of *Boletus Laricinus*, which in the northern parts of Europe grows on the trunks of old larch trees, affords a fine purple dye, and has been pretty extensively used in medicine.

Although some of the oldest larch trees in Britain and particularly two, planted at Dunkeld, Perthshire, in 1741, and which, according to Miller, have been erroneously supposed the oldest in this country, are still healthy and vigorous, yet in different parts much younger trees, and even whole plantations, have been found to acquire a seemingly premature old age, and perish from the the effects of a disease generally termed the Larch Rot; to account for which, various hypotheses have

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been advanced, such as a degeneracy in the plants raised from seeds of diseased trees. Hence, the Highland and Agricultural Society of Scotland offered premiums for the most extensive introduction into this country of seeds from healthy trees in the native forests on the Continent. With what results the future growth of plants raised from these may be attended is of course as yet unknown; but in the seed-beds the produce of native trees bear a marked superiority over those raised from the seed of this country, in vigour, rapidity of growth, and the luxuriant healthy colour of their foliage.

Planting larch after Scots fir has been ascertained to be very detrimental to the health and success of the former, and the dry rot has also been ascribed to a neglect or bad management of the young plantations, to a too wet, as well as a too dry soil and subsoil; also to a ferruginous soil, on all of which the disease may doubtless in some measure depend. Too deep planting is another reason given for the rot in larch, apparently, however, with less propriety than either of the preceding. The question, therefore, seems to be still involved in a good deal of obscurity. One fact, however, seems to be universally admitted, viz., that the disease generally, if not invariably, commences in the roots (either in the tap or laterals), and that it proceeds upwards, first through such parts of the trunk as these roots more immediately influence, spreading from thence until the tree becomes completely destroyed, or at least rendered unfit for the generality of purposes to which the timber is applied. From this it may be inferred, that as the larch, and most others of the Pine family, have not the power, like many of the hard-wood trees, of reproducing either roots or young shoots, when these receive any very considerable check, that any material injury done to these, particularly the former, whether from the effects of drought, moisture, or insects destroying the functions of the leaves and consequently retarding the returning flow of proper sap to the roots and other parts of the tree, or any other cause whatever, must at first weaken the whole plant, and, consequently, render it less able to exist under repeated attacks arising from the same or different causes.

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Pinus microcarpa.

(b) PINUS MICROCARPA. (*Lamb.*)

English—Small-Coned or Red American Larch.
French—Melege d'Amerique.
German—Americanische Rhinzapfige or Roth-Larche.

66

Specific characters.—Tree medium sized, upright, of a slender, conical, or pyramidal habit of growth, but not so much so as the last species; branches horizontal, or slightly pendulous, except the upper, which are rather aspiring; branchlets also pendulous, and, together with the branches, more numerous and dense than those of *P. pendula;* bark smoothish, of a brownish grey colour, and light brown on the young twigs; leaves of a vivid grassy green colour, and shorter than those of the common larch; catkins very similar to those of the last; but the bracteæ of the female or young cones are more of a regular oval shape; ripe cones about half an inch in length, easily detached from the branches, of an oblong shape; scales also somewhat oblong or oval, light brown coloured, slightly incurved, and rougher or distinctly striated than those of the black larch; seeds also shorter or more rounded, and, together with the alæ, of a light brown colour. Also a native of North America; and found chiefly in the same districts as the *P. pendula.*

M. Michaux, in his "Sylva Americana," seems to have included both the red and black American larches under the name of *P. americana.* His figure is certainly that of *P. microcarpa*, although some parts of the description apply more properly to *P. pendula.* He says "that in the United States, this tree is commonly designated by the name of *Hack Matack;* and the descendants of the Dutch, in New Jersey, call it *Tamarack.*" Whether, therefore, these names are really applied to one or both of the preceding species, seems uncertain; but at present, in this country at least, they are generally supposed to apply only to the *L. pendula*, or black larch. The timber of both may be considered as about equal in quality; that of *L. microcarpa* is, however, of a lighter, and more of a reddish colour. Neither of the American larches are found, under ordinary circumstances, to attain the same size in this country as the *L. europæa*, but succeed much better than it

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on damp or marshy soils; which, together with the peculiar habit of growth, particularly that of *L. pendula*, renders them very suitable in ornamental plantations.

PINUS microcarpa.

(*c*) PINUS PENDULA. (*Soland.*)

P. pendula.

English—WEEPING AMERICAN LARCH. | *French*—MELEGE FLEURER D'AMERIQUE. | *German*—AMERIKANISCHE TRAUER-LÄRCHE.

Specific characters.—Tree of medium size, slender, and generally bending towards the top; branches verticillate, few, remote, and pendulous; branchlets also thin, and more pendulous than the branches; bark smoothish, and very dark coloured, that on the youngest twigs of a dark purplish colour, inclining to grey; leaves like those of the common larch in shape, but rather longer, darker in colour, and arising from shorter and much darker coloured buds or sheaths; male and female catkins small and short, the latter generally tinged with reddish purple cones when ripe, easily detached from the branches, generally under three-quarters of an inch in length; scales round, or slightly approaching to an oval shape, smoothish, of a dark brown colour, few, loose, and slightly incurved on the margins; bracteæ much shorter than the scales, of a somewhat lyrate shape, waved on the margins, and tipped with a short, soft, acute point; seed considerably smaller than that of the common larch, and of an oblong shape; alæ, or wings, of a brownish purple colour. Native of North America. Introduced to Britain in 1739.

67

The *P. pendula* grows only in the colder parts of North America, being entirely confined to the northward of the 40° of latitude, and is found in greatest abundance in mountainous parts, on rather moist and inferior soils. The timber of *P. pendula* is of a darkish waved-like colour, very tough, durable, and, where it is plentiful, preferred for general purposes to any of the American pines or firs, which grow in the same parts.

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§ Cedrus.

Pinus Cedrus.

5° *CEDRUS.*

(*a*) PINUS CEDRUS. (*Linn.*)

English—Cedar of Lebanon. | *German*—Ceder vom Libanon.
French—Cedre du Liban.

68

Specific characters.—Tree above the medium size, of a conical or pyramidal form when young; but when old the branches spread widely and generally in a horizontal direction, which gives the tree a peculiar, broad, and often a flattened-top form. Leaves straight, three-fourths of an inch to an inch and a half in length, nearly cylindrical or indistinctly angled, tapering to a broad hard point, of a dark grassy green colour, chiefly solitary and fasciculated on those of a year old, and fasciculated only, or very rarely solitary, on all the older. Male catkins and young cones appear in October; ripe cones with short footstalks, erect, ovate, and from three to five inches in length; scales long, roundish-shaped, incurved on the margin, of a dusky brown colour, very firmly attached at their base, and scarcely opening when fully ripe; seeds of an irregular triangular form, nearly half an inch in length, lightish brown coloured, and forming an oblique angle, with a very broad membranous wing; cotyledons six. Native of Mount Lebanon, and other mountains of Asia, supposed to have been first introduced to Britain in 1683.

The Cedar of Lebanon is found naturally to succeed best on rich, deep, soils, on slopes near rivulets; its timber is to appearance very like that of the larch, but harder and much more ponderous. It, however, possesses so few of the remarkably valuable properties, particularly an agreeable smell and great durability, generally ascribed to cedar wood, that it seems more than probable to have been mistaken for or confounded with that of very different trees. It attains a height of from 50 to 80 feet, by upwards of 30 feet in circumference. In a young state, and in very genial situations and rich soils, it has a somewhat ovate-conical form, with branches nearly to the base; but when at maturity, the branches assume a horizontal position, spreading on either side to an extent equalling the

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height of the tree, and presenting a singular shelf-like appearance, the whole terminating with a remarkable, flat, tabulated head. The ovate-conical or pyramidal shape of individual trees is by no means to be considered constant, but must be attributed to peculiarities of soil and situation.

PINUS Cedrus.

6° *PINASTER.*

§ PINASTER.

(*a*) PINUS SYLVESTRIS. (*Linn.*)

P. sylvestris.

English—SCOTS FIR.	*German*—KIEFER ODER FÖHRE.	*Hungarian*—VAD FENGO.
French—PIN D'ECOSSE.		*Russian*—SOSNO.
Laplandic—BETZ.		

69

Specific characters.—Leaves short (from about one and a half to two inches in length), rigid, straight, or slightly waved and twisted, slightly concave on the interior, and convex on the exterior surface, marginated or serrulated on the edges, of a light green colour, bound together towards their base by a short thin membranous lacerated vagina or sheath; male catkins many together, short, and ovate, generally of a faint yellowish colour; cones pedunculated or stalked, seldom more than two or three together, round the termination of the young shoots, generally of a purplish colour, and pendent when young, afterwards greenish, and latterly of a dusky brown colour, and more upright, small, about as long or rather longer than the leaves, regularly conical and pointed, ripening the second year; scales thick, and terminating in a somewhat irregular four-sided often-recurved projecting point; seeds small and dark coloured; cotyledons five to seven. Grows naturally in Scotland, and in most of the northern countries of Europe. This species, and its varieties, are found in vast forests in Europe, from the middle northwards, to the 70° of latitude, and in Western Asia to the 63°. The wide range of this pine in the northern part of the eastern hemisphere, where it is found in all descriptions of soils, climates, and altitudes, in natural and cultivated states, may perhaps account for its varieties. The two most distinguished are the red-wooded or

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Pinus sylvestris.

native, and white-wooded, Haganoe or continental Scots fir, both of which are extensively cultivated. The other varieties, though conspicuously different, are only regarded as interesting and ornamental trees. The Scots fir, in its native state, is found to be more resinous and of firmer texture, and very different from planted trees, even when such are raised from native woods. The average height is from 80 to 100 feet, with a trunk of from two to four feet in diameter, forming a tabulated, conical, or even pyramidal head, which is greatly influenced by soil and situation.

Besides the value of the *P. sylvestris* as a timber tree, from it, as well as from others of the genus, a liquid resin is obtained by making incisions with a sharp knife, or other edged instrument, a little deeper than the bark, from which the resin flows into reservoirs made for its reception. This operation is performed from the end of May to about the middle of September, as it is only in warm weather that the juice flows freely. From this resinous juice are obtained, by various modes of preparation, yellow resin, essential oil of turpentine, common resin, and black resin or colophony. Also, by burning the roots, trunks or branches in a close furnace, somewhat in the same manner as is practised in burning charcoal, the juice is made to flow out into a cavity made below to receive it, and, without further preparation, except freeing it from pieces of burnt wood and other impurities, forms Tar, the uses of which are well known. Pitch is made by melting coarse hard resin, with a portion of tar, generally one-half, but the quantity is increased or lessened according to the consistency of the tar. Lamp-black is obtained by burning the impurities left in the precipitation of tar and pitch, and collecting the particles carried off and deposited by the smoke in the shape of soot. The Laplanders and other native inhabitants of the north of Europe, as well as of the north of Asia, prepare a kind of bread from the inner bark of the less resinous wild pines, on which, either alone or mixed with rye-meal, they often live during the great part of winter, and sometimes during the whole year.

The seeds of *P. sylvestris*, as well as those of most others of the persistent-scaled Coniferæ, are extracted by exposing the cones either to the heat of the sun, or drying them on kilns, or by other artificial means, and afterwards thrashing

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PINUS SYLVESTRIS.

or beating out the seeds, which are then sown in beds, and covered with from a quarter to half an inch of well pulverised soil. They are generally planted out permanently at two or three years of age, and are all the better if previously once, at least, transplanted in the nursery. A very efficient, though rather slovenly-like, method is to sow on heathy moors, where the trees are intended to remain, from six to eight quarts per acre of the clean seeds in January or February, the succeeding rains and moisture being sufficient to establish the seeds in the soil, and the same may be depastured the following summer with cattle, provided they are not allowed to eat it too bare.

P. Laricio.

(*b*) PINUS LARICIO. (*Poiret.*)

English—CORSICAN PINE. | *French*—PIN DE CORSE. | *Greek*—REUKE.

70

Specific characters.—Tree straight and tall, often 150 feet in height in its native country, of a regular conical form; branches comparatively short, and in regular whorls round the main trunk; leaves much longer (four to five inches), and darker coloured than those of *P. sylvestris*, flat or very slightly concave on the upper or interior surface, convex on the outer, and rough on the margins, much waved and twisted; sheath of the leaves about three-fourths of an inch in length, membranous, and generally torn-like; male catkins several together at the termination of the branches, cylindrical, obtuse, spreading, and about an inch in length, with long bracteæ at their base; cones generally solitary, without footstalks, scarcely half so long as the leaves, of a lighter colour, slightly curved, smaller, and terminating more bluntly than those of *P. sylvestris*; outer extremities of the scales rounded, prominently two-ribbed or angled transversely, and tipped with a hard blunt point; seeds of a greyish colour, and irregularly oblong, ovate shape, fully twice as large as those of *P. sylvestris*; cotyledons six to eight.

The *P. Laricio* grows naturally on the summit of the highest mountains of Corsica, and is also found in several parts of the south of Europe. Its timber is superior to that of the wild pine, being more weighty and resinous, but unless

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Pinus Laricio.

the sap-wood is completely removed, it is found to be rather unsuitable for withstanding moisture: it also grows much quicker, and arrives sooner at maturity than the *P. sylvestris*. In the Appendix to Neill's "Horticultural Tour through France and the Netherlands," a fine specimen of this pine is noticed as growing, in 1821, in the Jardin des Plantes at Paris, which was planted in 1784, and at that period measured 56 feet in height, being considerably larger and a much handsomer tree than the wild or Scots pine, *P. sylvestris*, growing beside it and under similar circumstances. More recent experience tends to prove that the *P. Laricio* is equally well suited for the climate of Scotland as the *P. sylvestris*, and that it is found to retain its valuable properties when grown in this country.

From M. Vilmorin, Paris (who has the credit of first directing general attention to this valuable pine), we received specimens of cones, seeds, and wood, the last from trees sown on his estate at Barris in May 1823, and cut in the winter of 1834-35, being 12 years of age. The specimen exhibited is the shoot of 1829, with part of that of 1828, 1830, being, when cut, five years old. It measures three feet in length, and nine and a half inches in circumference, at the thickest end; bark thin, pretty entire, and of a very light brownish colour.

P. Laricio austriaca.

(*c*) PINUS LARICIO AUSTRIACA. (*Ant.*)

English—Black Austrian Pine. | *German*—Schwarre östreichische Föhre.
French—Pin d'Autriche.

71

The following description of this pine, communicated by Sir J. M. Naismyth of Posso, Bart., is from the German of Professor Hoss's "Popular Account of the Trees and Shrubs of Austria."

Specific characters.—Leaves in pairs, two to five inches long, straight, rarely very slightly twisted, exterior surface semi-cylindrical, dark green, shining, with serrulate margins, interior surface fawn colour, almost flat, faintly marked with longitudinal lines, and surrounded at their base by a short sheath, which is of a light ash-grey colour, inclining to red when young, latterly becoming darker, and finally

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PINUS Laricio austriaca.

almost black; points hard, and of a brownish scorched-like colour; buds large, centre one, before beginning to expand, ten to fourteen lines in length, egg-shaped and pointed; scales dark brown, attenuated at the margin, furnished with long white fringes, and acuminate, the exterior or lower ones separating from the bud and recurved, the interior collapsed, and connected by a spontaneous exudation of white resin; flowers in the end of May; male catkins shortly peduncled, oblong, cylindrical, round, or bluntly pointed, becoming conical after arriving at maturity, placed many together in verticillated bundles round the bottom of the new shoots; the female flowers (catkins or young cones), two, three, or occasionally more together, with pretty long peduncles from the extremities of the young branches, round, oblong, erect, and dark red, becoming in July about six lines long and four lines in breadth, elliptical, and assuming a reddish brown colour; cones two years in arriving at maturity, ripe in October, of a conical shape, rounded at the base, two or three inches long, horizontal, or nearly so, of a light yellowish brown colour, passing into a deeper brown, and polished or shining-like; seeds very like those of *P. Laricio;* cotyledons also six to eight; stem or trunk cylindrical; bark very thick, of a blackish ash-green, marked with reddish brown spots; scales deeply and longitudinally cleft, the fissures of a uniform brick colour, lighter than in the silver fir; the branches stand in regular and remote whorls, aspiring next the tree, afterwards horizontal, and laterally drooping. In age the top becomes flat and spreading to a great extent; the bark of the young shoots is of a lightish yellow colour, regularly and deeply marked by the insertions of the leaves, furrowed and shining. Grows naturally in Austria, for the most part below the Breima Forest (Wienerwald); in the Banate, upon the Demoglet, by Wehadia, near to Hercules Baths; in the vicinity of the Schneeberg of Austria. It grows at higher altitudes than the silver fir. It naturally prefers a dry calcareous sand to a deep soil, but succeeds well in any loose shallow soil, when not too wet, and is mostly found in sandy or gravelly situations. The wood of the *P. austriaca*, which at the edge is a whitish yellow, and towards the heart a rusty yellow, is very resinous, tough, and strong. It is much valued as a timber when dry, and even surpasses the larch itself in resisting the injurious effects of water, or

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Pinus Laricio austriaca.

alternate moisture or dryness. It is much used by carpenters, joiners, and coopers. As firewood, it emits an intense and lasting heat, with an extraordinary powerful flame, but emits a considerable quantity of smoke, which renders it desirable in the manufacture of lamp-black. It is preferred to the beech for making charcoal, and the stumps or roots afford wood for torches; and amongst all the native pines of Austria, it yields the greatest quantity of turpentine.

This tree, though planted considerably since its introduction by our firm into this country, in 1833, deserves, on account of its excellent qualities, much greater attention as to general cultivation. It is possible that it will ultimately supersede the common Scots fir; but the present high price of plants, compared with the latter, has hitherto prevented planters using it more extensively.

P. Pinaster.

(*d*) PINUS PINASTER. (*Solander.*)

English—Pinaster or Cluster Pine. | *German*—Stern Kiefer.
French—Pin maritime.

72

Specific characters.—Indigenous to the south of Europe, on the shores of the Mediterranean, Greece, Upper Italy, and Spain, and extensively cultivated on the shores of the Atlantic, in France and other countries. On the Apennines it is found 2800 feet above the level of the sea. Soil and situation greatly influence its growth; but in good dry sandy loam, or deep sand with a dry gravelly substratum, it attains 50 to 60 feet and more in height. In shallow, peaty, wet, or calcareous soil, it does not grow at all. It forms a handsome pyramidal tree, with regular whorls of branches, which invariably turn upwards, and are thickly clothed with leaves at intervals, occasioned by the dropping off of the male catkins (which occupy a space from four to six inches in length), which is characteristic of the species. The leaves are dark green, and six to seven inches long. Cones five to six inches long, ovate, sessile, numerous, in whorls, disposed horizontally, whence the name Pinaster, "star pine." The trunk, even of young trees, is clothed with a deeply-furrowed coarse bark. It is of rapid growth, and attains, in ten years, as many feet and more in height, and, in twenty years, about 30 feet. In France, it has been employed

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for covering immense tracts of sand along the shore. Resin is extracted by slicing the bark; and by burning the wood, tar and lamp-black are produced. In Britain, where it has also been planted, in some places extensively, it succeeds best in dry sand, or sandy loam on a dry bottom, and is considered an ornamental tree, and useful for covering barren places exposed to the sea. The wood is soft and not very durable, but is used in France for a great many purposes, such as boxes, &c.

PINUS Pinaster.

7° *STROBUS.*

§ STROBUS.

(*a*) PINUS STROBUS. (*Linn.*)

P. Strobus.

English—WEYMOUTH PINE. | *French*—PIN DU LORD WEYMOUTH.
German—WEYMOUTH KIEFER.

Specific characters.—Indigenous to North America, occurring from 43° to 48° lat. In valleys and crevices of mountains, and on the banks of rivers, in places having an accumulation of fertile soil, it attains its greatest perfection, from 150 to 200 feet in height, by twelve or sixteen feet in circumference. It accommodates itself, however, to a variety of soils. When grown in masses, the stem is clean and straight, and on that account it is imported from America, and used for masts, bowsprits, &c. The wood is whitish yellow, pretty hard, fine-grained, and easily worked. The bark is smooth, dark grey, changing when old to a brownish colour, impregnated with resin, which has an agreeable odour. It received the popular name from Lord Weymouth, who was the first who planted quantities of them, and from whose plantation a great number at present in this country were raised from seed. Leaves three to four inches long, of a light bluish green, spreading in summer, but in winter reclining, almost lying close to the branches. Cones about five or six inches long and one inch and a half broad, rather curved, cylindrical, gracefully drooping, produced from the axils of the common axis of the verticillate-standing branches.

73

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Pinus Cembra.

(*b*) PINUS CEMBRA. (*Linn.*)

English—Swiss Stone Pine. | *German*—Zürbel-Kiefer. | *French*—Pin Cembro.
Swiss—Alvies. | *Russian*—Kedr. | *Hungarian*—Tzirboly a.

74

Specific characters.—Tree medium sized, from 20 to 50 feet high, of a regular conical habit of growth; branches horizontal, short, and rigid; bark smooth, at least until it attains a considerable size, of a greenish colour, and afterwards changing to a light grey; leaves three to four inches long, fine, nearly straight, and of an agreeable light green colour, except the inner surfaces, which are marked with longitudinal silvery channels, exterior surface slightly convex, mid-rib of the interior very prominent, so as to give the whole leaf a triangular-like form; margins scabrous or serrated; scales which surround the base of the leaves lanceolate-acuminate and membranous at the edges, generally falling off after the first season; male catkins short, crowded at the base of the young shoots, and of a bright purple colour on their outer surfaces; young cones globose, erect, nearly sessile, and of a purplish or violet colour, covered with a fine bloom, which they retain until nearly ripe, changing afterwards to a brownish colour, and are, when at full maturity, of an oval form, about two inches in length by one and a half in breadth; scales oval, loose, and sometimes reflexed at the margins; seeds or nuts rather larger in size than common pease, of an irregular somewhat triangular shape, each with a hardish shell surrounding the kernel, which is of a pleasant nut-like flavour; wings obsolete; cotyledons eleven to thirteen.

A native of the Alps in Switzerland, and those immediately adjoining, at an elevation of from 4000 to 6500 feet. It is rather a handsome tree, upwards of 50 feet in height, and grows equally in very poor and dry soils, as well as in moist situations. In its native habitation its growth is very slow, and seldom found large enough for carpentry. In Scotland, after five or six years, it has often annual shoots from one to one and a half foot. On account of the high altitude and barren soils where it will grow, it is well adapted for planting on the hills of Scotland, not only for shelter, but also for its timber. The wood is durable, and remarkably fine-grained and fragrant.

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SECTION II.—FRUIT TREES.

Varieties cultivated.

THE Fruit Trees cultivated in this country comprise the Apple, the Pear, the Cherry, the Plum, the Apricot, the Nectarine, the Peach, the Spanish Chestnut, the Walnut, the Medlar, the Quince, the Mulberry, and the Service, not one of which can be considered indigenous. To the care and attention bestowed on the native crab or wild apple by the ecclesiastics of the middle ages, we owe many varieties we possess of the apple. The same may be said of the plum, and its parent the sloe. To the monks, also, we are indebted for the introduction of all our other cultivated fruits. Indeed, to these churchmen generally, we owe more of whatever tends to humanize, civilize, and supply our present wants, than we care to acknowledge. Whatever may have been their faults, they were undoubtedly men of peace; and the history of the progress of Agriculture and Horticulture in Great Britain is sufficient to prove, that, while the great cotemporary warriors were doing all they could to mar and spoil the face of the country, the monks were spending their lives in improving it. But for them it is scarcely probable that, prior to the sixteenth century, there would have been a single fruit tree of any importance in this island; for those indigenous to the soil were of the most worthless description, as we have already noted.

Extension of the number.

The dissolution of the religious houses, however, and the spreading abroad of the contents of their nurseries, gave a great impulse to the general culture of fruit-trees. The subsequent extension of our intercourse with foreign countries enabled us to add others to our list; and from that period to the present day we have gone on steadily augmenting the number,—gathering from all parts of the globe those most prized, and gradually improving those which we have already made our own.

We had occasion, a few months since, to prepare a descriptive list of all the

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fruits cultivated in this country; and as this list comprises not only those fruits which are borne on trees, but also those which may be called shrubby and herbaceous, we have reprinted it in the form of an Appendix. The fruit trees herein described are comprehended under the following genera:—

1. Pyrus.
2. Mespilus.
3. Prunus.
4. Amygdalus.
5. Cydonia.
6. Juglans.
7. Castanea.

All of these are described in Section I., with the exception of the following.

Pyrus.

I. PYRUS.

For generic characters, &c., see Section I., page 30.

P. communis.

1° PYRUS COMMUNIS. (*Linn.*)

English—Common Pear.	*German*—Gemeine Birne.	*Russian*—Gruscha.
French—Poirier.	*Italian*—Pero Domestico.	*Polish*—Gruska.
Dutch—Peereboom.	*Spanish*—Pera.	*Arabic*—Kummithi.

75

Specific characters.—Branches and buds glabrous; leaves ovate, serrated, glabrous; flowers corymbose.

A middle-sized deciduous tree, found wild in woods and waste places, from the east of Russia to the west of Europe. Flowers generally white, produced in April and May. Fruit, in the wild state, small, green, acid, and hard.

This and the following species are notable examples of what man, with perse-

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PYRUS communis.

verance, labour, and skill, may achieve in improving in quality and quantity the fruits of the earth. Nothing can be more striking than the contrast beween the luscious and mellow fruits now known as pears and the austere and unpalatable fruit of that name in the wild state. There are now from 300 to 400 acknowledged varieties of pears in cultivation, which enormous number is yearly increasing, for an account of which see Appendix, page 17.

The wood is strong, hard, compact, and fine-grained, slightly tinged with red; is sometimes substituted with advantage for box by engravers. It is readily stained, and then it so closely resembles ebony as to be scarcely distinguishable from it. As fuel it is much valued, producing a vivid flame and intense heat, and makes excellent charcoal. The leaves afford a yellow dye, and are sometimes used in the Highlands of Scotland to give a green tinge to blue cloth.

2° PYRUS MALUS. (*Linn.*)

P. Malus.

English—COMMON APPLE.	*Dutch*—APPELBOOM.	*Spanish*—MANZANO.
French—POMMIER COMMUN.	*Italian*—MELO POMO.	*Russian*—SABLON.
German—GEMEINER APFEL.	*Portuguese*—MACEIRO.	*Arabian*—TGFFAH.

Specific characters.—Leaves ovate-acute, crenate, woolly on the under surface; flowers in corymbs; calyx with the tube woolly; styles glabrous. 76

A deciduous tree, 30 to 50 feet high, as widely distributed over Europe as the preceding, and, like it, the fruit has been cultivated from time immemorial. There are several hundred varieties of this fruit in cultivation, some of which are of a large size, others of the finest red and purple hues, while some are so transparent that the seeds can be seen through the skin and pulp. Flowers are white, beautifully tinged with red in all the varieties. The tree is neither so large nor so handsome as the common pear, but its blossoms, which are fragrant, are more ornamental. The wood is hard and fine-grained, and, what is somewhat singular, is heavier and harder in cultivated than in wild trees. The wild or crab apple is sometimes used in France and Germany for making hedges. The cider of commerce is made

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Pyrus Malus.

from this fruit. Pigs are known to thrive well on apples, and an American writer has lately recommended apples for feeding calves in spring. The bark affords a yellow dye, and the leaves are eaten by cattle. Grass vegetates, and other trees are found to thrive well under the shade of both the apple and pear tree.

In the Appendix will be found a complete list of all the cultivated varieties of the apple.

Cydonia.

II. CYDONIA. (*Tournef.*)

QUINCE.

Generic characters.—Small trees or shrubs, natives of middle and southern Europe, and eastern Asia. Leaves alternate, entire, or serrated, often woolly below, bistipulated; flowers showy, solitary, or in small umbels; calyx tubular-campanulate, connected with the ovary, five-parted; corolla five-petalled, inserted in the tubular calyx; petals orbiculate, alternate with the leaflike lobes of the calyx; stamens many, inserted on the base of the petals; filaments filiform, subulate; anthers roundish, two-celled, longitudinally opening; ovary inferior, five-celled; cells many-ovuled; styles five; fruit (pome) five-celled; cells many-seeded; seeds upwards fixed, with a mucilaginous cover; embryo exalbuminous, straight; cotyledons convex-flat, inferior.

C. vulgaris.

1° CYDONIA VULGARIS. (*Pers.*)

COMMON QUINCE.

77

Specific characters.—A small tree of a crooked habit of growth, indigenous to middle and southern Europe, where it is found growing in moist soils, near rivulets, delighting in somewhat shady situations. This species is represented by three cultivated varieties,—viz., the pear-shape-fruited, the apple-shape-fruited,

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and the Portugal. They are grown for their fruit, which is used for making marmalade and similar purposes, and not eaten raw, on account of their astringent taste in that state. The Portugal variety is the best for marmalades, the pulp of which turns a fine crimson or purple colour, and is much softer and less austere than the other varieties. The pear and apple-shape-fruited varieties are, however, much more prolific, and handsomer in appearance as to shape and external colour of the fruit. The two latter varieties are often planted for ornament, and they certainly are very handsome objects either when in flower or fruit. The tree seldom attains above 15 to 20 feet in height, and is generally very crooked in stem and branches. Bark dark brown, smooth. Wood seldom of such a size and quality to be of much use; leaves roundish-ovate, obtuse at the base, entire, dusky green above, whitish beneath; flowers large, pale red or white; calyx tomentose, lobes leaflike, serrulated. CYDONIA vulgaris.

III. MESPILUS. (*Lindl.*) MESPILUS.

MEDLAR.

Generic characters.—Small deciduous trees occurring in the middle and north of Europe, and west of Asia. Leaves alternate, lanceolate, serrulated, bistipulated; flowers large, nearly sessile, mostly singly, with persistent bracts; calyx tubular-turbinate, connected with the ovary, five-parted, parts leaflike; corolla five-petalled, fastened to the disk of the calyx; petals suborbiculate, alternate with the leaflike divisions of the calyx; stamens numerous, fastened to the petals; filaments filiform, subulate; anthers roundish, two-celled, longitudinally-opening; ovary inferior, five-celled; cells two-ovuled; styles five, quite smooth; fruit (pome) turbinate, crowned by the leafy calyx, five-celled; cells one-seeded.

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Mespilus Germanica.

1° MESPILUS GERMANICA. (*W.*)

GERMAN OR COMMON MEDLAR.

78

Specific characters.—Indigenous to Europe and the west of Asia; occurring in woods, forming a middle sized tree. This species comprises various varieties. De Candolle enumerates three, viz.:—

1. Sylvestris—spiny, with small fruits.
2. Stricta—spineless, with double serrated leaves.
3. Diffusa—spineless; leaves nearly entire, fruit often abortive of seeds.

The following are cultivated:—

1. Dutch Medlar—bearing the largest fruits.
2. Nottingham Medlar—fruit obovate; middle sized.
3. Stoneless Medlar—fruit small; inferior.

The fruit of the Medlar is only eaten in a state of incipient decay, when it is very agreeable to some palates.

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APPENDIX.

LIST OF FRUIT TREES.

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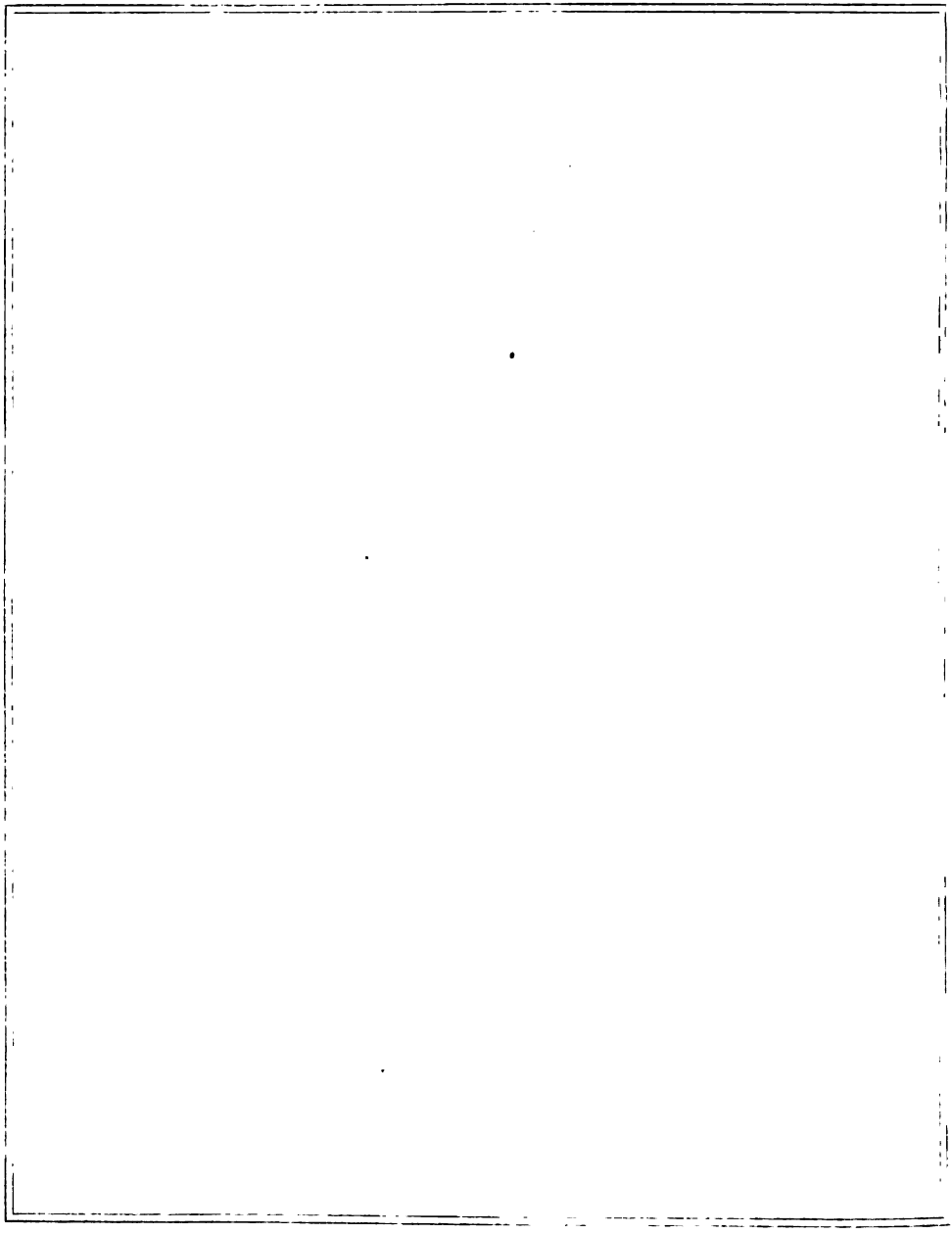

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FRUIT TREES.

APPLES.

		s.	d.	to	s.	d.
DWARF, 6 to 9 inch stem	each	0	9	to 1	0	
DWARF Trained, 6 to 9 inch stem	—	2	6	to 3	0	
DWARF on Paradise Stocks, 9 inch stem	—	1	/	to 1	6	
STANDARD, 3 to 4 feet stem	—	1	/	to 1	6	
STANDARD on Paradise Stocks, with fruit buds, 2½ to 3 ft. stem	—	1	6	to 2	0	
RIDER, 4½ to 6 feet stem	—	1	6	to 2	0	
RIDER Trained, 4½ to 6 feet	—	3	6	to 4	6	

NEW SORTS AND PICKED TREES SELECTED IN NURSERY CHARGED HIGHER.

ALLAN BANK SEEDLING (CHALMER'S) (*new*), 1st size, 1st quality, roundish. A large and excellent variety, is a native of Scotland, quite hardy, and a good bearer. December to May. Dessert.

ALEXANDER, 1st size, 1st quality, conical, striped. Fine fruit on a standard, but bears thinly, more prolific on a wall, which it highly deserves. In season from September to December. Used for Culinary purposes.

SYNONYM.—*Emperor Alexander, Russian Emperor.*

ALFRIESTON, 1st size, 1st quality, roundish, greenish yellow. This variety, in good situations, bears well in Scotland as a standard; a valuable fruit, large and heavy. November to April. Culinary.

SYN.—*Newton Pippin, Lord Gwydyr's Newton Pippin.*

AITKEN'S SEEDLING, 2nd size, 1st quality, roundish, greenish yellow Good and hardy, a free bearer, allied to Hawthornden. November. Culinary and Dessert.

ANNAT SCARLET PIPPIN (*new*), size medium, quality good, very beautiful. Dessert. January to February.

API-PANACHE. Very ornamental young wood, and fruit striped. December to January. Dessert.

API-ROSE, 3rd size, 2nd quality. Fruit beautiful, but more curious than useful. October to April. Dessert.

SYN.—*Lady Apple.*

ASHMEAD'S KERNEL, 2nd size, 1st quality, oblate, yellow. A good bearer much cultivated near Gloucester. November to May. Dessert.

ASTRACHAN WHITE, 2nd size, 1st quality, conical, pale yellow. Bears profusely as a standard, quite hardy, and well adapted for the climate of Scotland. August to September. Dessert.

SYN.—*Pomme D'Astrachan, Transparent Muscovie, or Zealande.*

———— RED, 1st size, 1st quality, conical, red. A hardy apple, beautiful, and very good. August to September. Dessert.

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Apples

AUTUMN CITRON (*new*), large size, fine quality, and a good bearer. September and October. Dessert and Baking.

BALDWIN, 1st size, 1st quality, round, oblate, greenish yellow. An American production, large and good, may do as a standard, but deserves a wall, an abundant bearer. December to April. Culinary and Dessert.
SYN.—*Red Baldwin*, *Woodpecker*.

BEACHAMWELL, 3rd size, 1st quality, ovate, yellow. Small but excellent dessert fruit, and merits a wall. December to March. Dessert.
SYN.—*Motteux's Seedling*

BEAUFIN, NORFOLK, 1st size, 1st quality, oblate, dark red. This variety is quite hardy, good for baking and excellent for drying. January to June. Culinary.
SYN.—*Cats' Head Beaufin*, *Read's Baker*, *Norfolk Biffin*.

———— STRIPED, 1st size, 1st quality, oblate, striped. This variety is of Norfolk origin, fruit very large, sometimes twelve inches in circumference, a good sort. October to May. Culinary.
SYN.—*Striped Beaufin*.

BEAUTY OF KENT, 1st size, 1st quality, roundish, striped. Very hardy, bears well as a standard. October to February. Culinary.

BEDFORDSHIRE FOUNDLING, 1st size, 1st quality, round oblate, yellow. Most handsome kitchen fruit, very large and excellent, hardy, and a good bearer. November to March. Culinary.
SYN.—*Cambridge Pippin*.

BREEDON PIPPIN, 3rd size, 1st quality, oblate, yellow. October to November. Dessert.

BELLE ANGLAISE (*new*), 1st size, 1st quality, roundish. New and fine, bears well as a standard, handsome and good, merits cultivation. November to December. Culinary and Dessert.
SYN.—*Beauty of England*.

———— ET BONNE, 1st size, 1st quality, conical, striped. This variety is not generally known, large and good. November to April. Culinary.

BELLEFLEUR BRABANT, 1st size, 1st quality, roundish, yellowish red. Large and excellent, deserves a wall. April. Culinary.

BETSY, 2nd size, 1st quality, oblate, conical, yellowish russet. Good dessert apple, with juicy and tender flesh. November to February. Dessert.

BESS POOL, 2nd size, 1st quality, ovate, greenish red. Tree vigorous, forms a large and handsome standard. May. Culinary and Dessert.

BLENHEIM PIPPIN, 1st size, 1st quality, roundish, yellow. Free grower, soon forms a large standard, but bears thinly. November to February. Culinary and Dessert.
SYN.—*Blenheim Orange*, *Woodstock Pippin*.

BONAR'S PIPPIN, 2nd size, 1st quality, round, greenish yellow. Hardy and good variety. December to January. Dessert.

BORSDORFER, 2nd size, 1st quality, round, pale yellowish red. Native of Germany, flesh firm and crisp, juice abundant, with a pleasant flavour.
SYN.—*Garret Pippin*, *King George*.

———— BLACK, 3rd size, 2nd quality, roundish, dark red. Peculiar coloured apple. November to January.
SYN.—*Black Crab*.

BOUGH AUTUMN, 1st size, 1st quality, roundish, yellow. Native of America, early, large, and handsome, good bearer, but soon decays. August. Culinary.
SYN.—*Large Yellow*.

BRIDGEWATER PIPPIN, 1st size, 2nd quality, yellowish russet. Hardy, does well as a standard. October to December. Culinary.

BROAD-EYED PIPPIN, 1st size, 1st quality, oblate, yellow. Most desirable kitchen apple, large and good. September to December. Culinary.

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Apples.

BROOKE'S PIPPIN, 3rd size, 1st quality, ovate, yellowish russet. Handsome fruit, hardy, and a good bearer. September to January. Dessert.

BROUGHTON PIPPIN, 3rd size, 2nd quality, roundish, yellowish red. October to December. Dessert.

BUCKLAND DEVONSHIRE, 2nd size, 1st quality, oblate, pale yellow. Hardy, and a good bearer. December to March. Culinary and Dessert.

SYN.—*Dredge's White Lily.*

BURNS' SEEDLING, 1st size, 1st quality, roundish, yellowish red. A handsome and very desirable sort. October to January. Culinary.

BURR KNOT, 1st size, 1st quality, roundish, yellow. Good bearer, and on young and healthy trees the fruit is large and excellent. October to January. Culinary.

SYN.—*Burr Apple.*

BYSSON WOOD, 3rd size, 1st quality, roundish, russet. Good variety, will do as a standard. December to February. Dessert.

SYN.—*Bysson Wood Russet.*

CALANDER, 1st size, 1st quality, conical. Excellent cooking apple, bears freely. October to December. Culinary and Dessert.

CALVILLE BLANC, 1st size, 1st quality, oblong, pale yellow. Large and rather handsome, good for cooking; trees strong growers and good bearers. December, February, and April. Culinary.

SYN.—*Large White Calville, White Calville.*

——— BLANCHE D'HIVER, 1st size, 1st quality, pale yellow. Very large, will do as a standard, deserves a wall. January to April. Culinary and Dessert.

SYN.—*Winter Calville.*

——— D'ETE, 2nd size, 1st quality, pale yellow. This is the earliest of Calville's, very productive, but only adapted for kitchen use. August to September. Culinary.

SYN.—*Early Calville, Summer Calville.*

——— MALINGRE, 1st size, 1st quality, red. Excellent bearer, very large, and keeps well. January to April. Culinary.

——— ROUGE, 1st size, 1st quality, oblong, pale red. Very large, and good cooking apple, flesh delicate, juice abundant, and very agreeable. November to February. Culinary.

SYN.—*Red Calville.*

CAMBUSNETHAN PIPPIN, 2nd size, 1st quality, oblate, yellowish red. Quite hardy as a standard. October to January. Dessert and Culinary.

SYN.—*Watch Apple, Winter Redstreak.*

CAROLINE, 1st size, 1st quality, roundish, striped. Hardy and handsome, good as a standard. November to February. Culinary.

CAT'S-HEAD ROUND, 1st size, 1st quality, roundish, yellow. Very handsome and large fruit, flesh tender and juicy. December to March. Culinary.

CELLINI, 2nd size, 1st quality, oblate, greenish red. Almost first size, early bearer, first rate as a standard, and very prolific. September to October. Culinary and Dessert.

CHRISTIE'S PIPPIN, 3rd size, 1st quality, oblate, yellow. Good bearer in some soils, subject to canker. December to February. Dessert.

CLARKE, OR CALVILLE ECARLATE, 1st quality. New and fine; from the Continent.

CLEY PIPPIN, 3rd size, 1st quality, roundish, yellow. Bears well as a standard, hardy sort. October to March. Dessert.

CLYDESDALE.

COBHAM, 2nd size, 2nd quality, roundish, greenish red. Hardy as a standard. November to January. Culinary and Dessert.

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Apples.

COCAGEE, 2nd size, 1st quality, ovate, yellow. Quite hardy, and a good cider apple. October. Culinary.

COCKLE PIPPIN, 2nd size, 1st quality, ovate, brownish yellow. Excellent apple, and the tree a most fertile bearer (allied to Worlbedding Stone Pippin). January to April. Dessert.

SYN.—*Nutmeg Pippin*, *White Cockle Pippin.*

COCKPIT, 2nd size, 2nd quality, roundish, yellow. Useful culinary apple for winter use. December to March. Culinary.

CODLIN, CARLISLE, 3rd size, 1st quality, conical, yellow. Rather a weak grower, but very good. August to December. Culinary.

——— DUTCH, 1st size, 1st quality, roundish, yellow. Very handsome, and makes a fine standard, fruit very large and good. August to September. Culinary.

SYN.—*Chalmers' Large.*

——— DRYDEN, medium size, fine quality, hardy, and very prolific.

——— KINNOUL, medium size, good quality, a good hardy sort.

——— KENTISH, 1st size, 1st quality, roundish, greenish yellow. Very hardy, and a good bearer. August to September. Culinary.

——— KESWICK, 1st size, 1st quality, conical, greenish yellow. Excellent variety, bears early, and very prolific, one of the best for baking, or jelly. August to September. Culinary.

SYN.—*White Codlin.*

——— KILKENNY, 1st size, 1st quality, round, yellow. Handsome fruit and good. August to September. Culinary.

——— MANKS, 1st size, 1st quality, conical, pale yellow. Well known as being a great bearer, and one of the best kitchen apples, comes early into use. August to October. Culinary.

SYN.—*Irish Pitcher*, *Irish Codlin.*

——— OLD ENGLISH, 2nd size, 1st quality, conical, pale yellow. This is a very old variety, highly esteemed for kitchen use, deserves cultivation. August to October. Culinary.

SYN.—*English Codlin.*

——— ROYAL, 1st size, 1st quality, conical, yellow. Not generally known, very large and good. August to September. Culinary.

——— SPRING GROVE, 1st size, 1st quality, conical, pale yellow. One of the very best of codlins, early, large, and good. July to September. Culinary.

——— WINTER, 2nd size, 1st quality, conical, green. Good keeper and a great bearer. September to February. Culinary.

COLE, 1st size, 1st quality, roundish, red. This is a most desirable and handsome fruit, a good bearer as a dwarf, standard, or on paradise stocks. August to September. Culinary and Dessert.

SYN.—*Scarlet Perfume.*

CORNISH, AROMATIC, 1st size, 1st quality, roundish, russet red. Handsome and excellent, bears well on paradise stocks. October to January. Dessert.

CORSTORPHINE, 2nd size, 2nd quality, conical, pale yellow. September to October. Culinary.

COUNTESS OF DUNMORE. Culinary and Dessert.

COURT-PENDU PLAT, 2nd size, 1st quality, oblate, dark red. Excellent winter dessert apple, tree hardy, blossom late in expanding, well adapted for cold situations. December to April. Dessert.

SYN.—*Garnon's Apple*, *Wollarton Pippin.*

COURT OF WICK, 3rd size, 1st quality, oblate, yellow. Very handsome dessert apple, a good keeper, rather small, but of the highest excellence. October to March. Dessert.

SYN.—*Fry's Pippin*, *Wood's Huntingdon.*

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Apples.

CROFTON, SCARLET, 2nd size, 1st quality, oblate, red. Hardy, handsome, and a good bearer. October to December. Dessert.

———— PIPPIN, 2nd size, 1st quality, roundish, pale red. This and the preceding are of Irish origin, they are both good, but this is the favourite in Ireland. November to December. Dessert.

SYN.—*Irish Crofton.*

———— WHITE, 2nd size, 1st quality, oblate, pale red. Earlier than the preceding, better adapted for kitchen than table use, a most abundant bearer. October. Culinary and Dessert.

SYN.—*Summer Crofton, Early White Crofton.*

CROWN REINETTE (*new*), hardy, of large size, and very prolific. April. Culinary and Dessert.

DE GAGE, 2nd size, 1st quality.

DE ST. JULIAN, 1st size, 1st quality, roundish, greenish yellow. Very handsome and excellent table apple, hardy, a good bearer, and preserves well. December to March. Dessert.

DE XVIII. OUNCES (*new*), 1st size, 1st quality, roundish, greenish yellow. Very large, remarkably handsome, and regular bearer. December to January.

SYN.—*Twenty Ounce.*

DES IV. GOUTS (*new*).

DEUX ANS HAMBLEDON, 1st size, 1st quality, roundish, greenish red. Valuable sort, keeps long without shrivelling. January to May. Culinary and Dessert.

DEVONSHIRE.

DUCHESS OF OLDENBURGH, 2nd size, 1st quality, roundish, striped. Very handsome fruit, flesh very rich and juicy, a native of Russia. September. Dessert.

DUKE OF GLOUCESTER, 3rd size, 1st quality, roundish, russet. This is a small but very excellent fruit, keeps well. November to March. Dessert.

———— WELLINGTON, 1st size, 1st quality, roundish, yellowish red. Excellent kitchen apple, keeps well, and retains its flavour, hardy. November to March. Culinary and Dessert.

SYN.—*Dumelow's Seedling, Normanton Wonder.*

———— YORK (NEWBOLD'S), 1st size, 1st quality, roundish, pale greenish red. Excellent kitchen apple, tree of a robust habit. December to April. Culinary.

DUTCH MIGNONNE, 1st size, 1st quality. Fruit large and handsome, tree hardy, flesh firm and crisp, juice abundant, sub-acid, with aromatic flavour. December to April. Culinary and Dessert.

SYN.—*Reinette Doree.*

DUMPLING (MINIER'S).

———— (WATSON'S), 1st size, 1st quality, roundish, striped. Fruit very large, flesh juicy, has a pleasant sub-acid flavour. October to February. Culinary.

DOONSIDE, 2nd size, 1st quality. Excellent apple, tree hardy and productive, a native of Ayrshire. September to December. Dessert.

EARLY HARVEST, 2nd size, 1st quality, roundish, pale yellow. Native of America; it is considered to be the best in its season for beauty and quality, either for kitchen or table use. November. Dessert and Culinary.

SYN.—*Dumelow's Seedling, Normanton Wonder.*

———— GOWRIE, 1st quality.

———— MARYGOLD.

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Apples.

EASTER PIPPIN, 2nd size, 2nd quality, roundish, green. Remarkable for keeping sound and firm for two years, flesh very firm, and though not juicy, of a good sub-acid flavour. Two years. Culinary and Dessert.
SYN.—*French Crab.*

NOBLE KING *(new).*

EDINBURGH CLUSTER, 2nd size, 2nd quality, ovate, yellow. Very hardy and handsome apple, not the best quality, but very productive. November to January. Culinary.
SYN.—*Sir Walter Blacket's Favourite.*

ELTON PIPPIN, 2nd size, 1st quality, round, yellow. Raised by Knight; skin smooth and bright yellow, dotted with obscure specks, flesh yellowish, with a rich flavour. November to January. Dessert.
SYN.—*Downton Pippin.*

EMPEROR (DICKSON'S) *(new)*, 1st size, 1st quality, oblong, pale green. A large and very handsome variety, hardy and productive. October to January. Culinary and Dessert.

ENGLISH PIGEON *(new)*, December to February. Culinary and Dessert.

ESSEX PIPPIN, 3rd size, 1st quality, round, yellow. Small but handsome, allied to the Golden Pippin. October to February. Dessert.

FAMEUSE, or DE NIEGE, 2nd size, 2nd quality, roundish, pale greenish red. Handsome apple, remarkable for its white flesh. November to January. Dessert.

FAIRLEIGH PIPPIN, 2nd size, 1st quality, oblong ovate, yellowish green. A hardy and very handsome table apple, flavour excellent. January to April. Dessert.

FEARN'S PIPPIN, 2nd size, 1st quality, oblate, round. Very excellent fruit, suited either for table or kitchen use, is very productive, and hardy as a standard. November to February. Culinary and Dessert.
SYN.—*Clifton Nonsuch.*

FLETCHER'S KERNEL, 2nd size, 1st quality, roundish, yellow. Handsome, of good quality, and very productive. November to January. Dessert.

FLOWER OF KENT, 1st size, 1st quality, oblate, greenish red. Excellent baking apple, large and handsome. November to January. Culinary.

FORMAN'S CREW, 3rd size, 1st quality, conical, yellow russet. Native of Wales, excellent, equal to Golden Pippin. November to April. Dessert.

FOXLEY PIPPIN, 3rd size, 1st quality, roundish, orange. November to February. Culinary and Dessert.

FULWOOD, 1st size, 1st quality, oblong, green. Very hardy and good cooking apple, healthy, and a good bearer. November to January. Culinary.
SYN.—*Fulwood Green.*

———— DUTCH, 1st size, 1st quality, oblong, green. Resembles the preceding but rather later, and the habit of the tree more robust; an excellent apple. December to May. Culinary.
SYN.—*Late Fulwood.*

GANGES, 2nd size, 1st quality, roundish, yellowish green. Excellent table apple, resembles Ribston Pippin. December to March. Dessert.

GENERAL DURHAM (STEWART'S).

GILLIFLOWER, CORNISH, 2nd size, 1st quality, ovate, dark greenish yellow. This is a most delicious fruit, but bears thinly, unless worked on paradise stocks.
SYN.—*Cornish July Flower.*

GLORIA MUNDI, 1st size, 1st quality, roundish, greenish yellow. November to January. Culinary.
SYN.—*Monstrous Pippin.*

GOGAR PIPPIN, 2nd size, 2nd quality, oblate, pale green. November to March. Dessert.

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Apples.

GOLDEN DROP (COE'S), 3rd size, 1st quality, ovate, yellow. January to May Dessert.

——— HARVEY, 3rd size, 1st quality, roundish, russet yellow. December to May. Culinary and Dessert.

SYN.—*Brandy Apple.*

——— PIPPIN (*true*), 3rd size, 1st quality, roundish, yellow. One of the finest of yellow apples for culinary purposes; the flesh retains the yellow colour after being cooked; flavour peculiar; highly esteemed. November to April. Dessert.

SYN.—*Old Golden Pippin.*

——— (FRANKLIN'S), 3rd size, 1st quality, oval, yellow. October to December. Dessert.

SYN.—*Sudlow's Fall Pippin.*

——— (HUGHES'S), 3rd size, 1st quality, roundish yellow. December to February. Dessert.

——— (KNIGHT'S), 3rd size, 1st quality, round, yellow. November to January. Dessert.

——— SUMMER, 3rd size, 1st quality, ovate, yellow. August to September. Dessert.

——— (SMALL'S) 3rd size, 1st quality, ovate, yellow. September to November. Dessert.

——— (SCREVETON'S), 3rd size, 1st quality, roundish, yellowish russet. May. Dessert.

SYN.—*Scarlet Golden Pippin.*

GOLDEN PIPPIN (KIRKE'S), 3rd size, 2nd quality, roundish, yellow. Great bearer, very handsome, but inferior to the preceding varieties of the Golden Pippin. December to March. Dessert.

SYN.—*New Golden Pippin.*

——— KNOB.

GOOSEBERRY APPLE, 1st size, 1st quality, round oblate, yellow. Brisk and peculiar flavour, a favourite in the London market. March to May. Dessert.

GRANGE'S PIPPIN, 1st size, 1st quality, yellow, green, and red. November to February. Dessert.

GRAVENSTEIN, 1st size, 1st quality, roundish, striped. October to December. Culinary.

SYN.—*Sabine of the Flemings.*

GREEN APPLE, 2nd size, 1st quality, round, green. Keeps very sound, less acid than the Eastern Pippin. January to June. Culinary.

——— CLUSTER PIPPIN.

GRISE, 2nd size, 1st quality, roundish, green russet. Canadian origin, of medium size, one of the finest dessert apples for a northern climate, and an excellent bearer. November to March. Dessert.

SYN.—*Pomme Grissi.*

GROSSE MIGNONNE (*new*), 1st size, 1st quality, roundish. Excellent dessert. December to February.

HAGGERSTON PIPPIN, 2nd size, 1st quality, roundish, greenish red. November to April. Dessert.

HALL DOOR, 2nd size, 2nd quality, oblate, yellowish red. Very hardy, habit of tree very erect, makes a fine standard. December to March. Dessert.

HAMMOND'S JERSEY PIPPIN, 2nd size, 1st quality. New and fine.

HANWELL SOURING, 2nd size, 1st quality, conical, greenish yellow. Valuable cooking apple, tender and juicy, keeps well. December to March. Culinary.

HAWTHORNDEN, 1st size, 1st quality, roundish, pale yellow. October to December. Culinary.

SYN.—*Red Hawthornden and White Hawthornden.*

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Apples.

HAWTHORNDEN, SEACLIFFE (*new*), 1st size, 1st quality, round, pale yellow. This is a very large and handsome apple, hardy, and a good bearer; highly deserves cultivation.

SYN.—*Seacliff Apple.*

———— NEW, 1st size, 1st quality, roundish, yellowish red. The fruit of this is larger than the old sort, keeps better, habit of the tree very robust. December to January. Culinary.

SYN.—*New Hawthornden.*

HOARY MORNING, 1st size, 1st quality, roundish, straw colour. Large and handsome English apple, good flavour, and highly esteemed for culinary use, flesh firm. October to March. Culinary.

SYN.—*Dainty, Sam Rawling's*

HOLLANDBURGH, 1st size, 2nd quality, roundish, reddish yellow. Very large and handsome, has a fine appearance, fruit nearly first quality, deserves cultivation. November to January. Culinary.

SYN.—*Bonne Rouge, Kirke's Scarlet Admirable.*

HOLLAND PIPPIN, 1st size, 1st quality, roundish, yellowish green. One of the finest kitchen apples, making the best tarts and pies, deserves a place in every garden. November to March. Culinary.

SYN.—*Pie Apple, Reinnette d'Holland.*

HUNT HOUSE, 2nd size, 1st quality, oblong, pale yellow. Excellent bearer, very hardy and good. December to March. Culinary.

HUTCHINSON'S SPOTTED, 3rd size, 1st quality, oblate, yellowish red. Small, but a very handsome and excellent table apple. November to December. Dessert.

INGESTRIE, RED, 3rd size, 1st quality, ovate, red. Raised by Knight, a small, though very pretty apple, tree hardy and very productive. October to November. Dessert.

SYN.—*Red Ingestrie.*

———— YELLOW, 3rd size, 2nd quality, oval, yellow. Another of Knight's seedlings, very handsome, almost first quality, hardy, and a good bearer. September to October. Dessert.

SYN.—*Yellow Ingestrie.*

INCOMPARABLE MOSS, 1st size, 1st quality. Most excellent fruit, either for table or kitchen, a fine keeper. April to June. Dessert and Culinary.

———— (KIRKE'S), 1st size, 1st quality, oblong, green, yellow, and red. Large and excellent kitchen apple, tree healthy and productive. November to January. Culinary.

IRISH PEACH. Excellent fruit from the tree, a good bearer, but does not keep.

SYN.—*Peach Apple.*

ISABELLA. SYN.—*Ramsay's Seedling.*

ISLE OF WIGHT PIPPIN, 3rd size, 1st quality, ovate, yellow. September to January. Dessert.

SYN.—*Orange Pippin.*

JANSEN VAN WELTEN (*new*), large, and of finest quality, very prolific, keeps well. December to June. Dessert and Baking.

JOHN APPLE, 3rd size, 1st quality, green, yellow, and red. Very old variety, and hardy, used principally for cider. December to February. Culinary.

JUNEATING, RED, 2nd size, 1st quality, ovate, striped. Excellent early apple, young trees rather slender, with woolly shoots, the fruit, when freshly gathered from the tree, has a rich and agreeable flavour. August. Dessert.

SYN.—*Eve Apple, Early Red Margaret, Striped Juneating, Striped Quarrenden.*

———— WHITE, 3rd size, 1st quality, roundish, pale yellow. Earlier than the preceding, of good quality, very handsome, and bears profusely. July and August. Dessert.

SYN.—*Juneating Golden Beauty.*

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Apples.

KENTISH FILLBASKET, 1st size, 1st quality, roundish, yellow, green, and brown. English apple, very large, and much admired for size and beauty. November to January. Culinary.
SYN.—*Lady De Gray's, Potter's Large.*

KERRY PIPPIN, 2nd size, 1st quality, oval, reddish yellow. Irish apple, flesh yellow and tender, crisp and sugary. September. Dessert.
SYN.—*Edmonston's Aromatic Pippin.*

KING HARRY, 2nd size, 1st quality, pearmain, russet. November to January. Dessert.

—— OF THE PIPPINS, 2nd size, 1st quality, pearmain, reddish yellow. Very handsome and good fruit, flesh delicately streaked with red and white, and very firm, also a good bearer. October to January. Culinary.
SYN.—*Hampshire Yellow.*

KINGSTON PIPPIN.

KNIGHT'S LARGE, 1st size, 1st quality, roundish, yellowish red. Excellent kitchen apple, large and handsome. September to October. Culinary.

LADY OF THE WEMYSS, 1st size, 1st quality, roundish, pale greenish red. Handsome and very good, hardy, and a good bearer. October to January. Culinary and Dessert.

LATE MARROW.

LEADINGTON GREY, 2nd size, 2nd quality, oval, yellowish brown. Flesh tender, juice sweet, with a singular and pleasant perfume. October. Culinary.

———— MONSTROUS, 1st size, 1st quality, oblong, green. October to January. Culinary.
SYN.—*Green Codlin.*

LEADINGTON SCARLET, 2nd size, 2nd quality, oblong, red. November to February. Culinary and Dessert.

LEMON PIPPIN (KIRKE'S), 2nd size, 1st quality, oval, yellowish green. An old and highly esteemed sort, flesh firm, of a sub-acid flavour. October to April. Culinary and Dessert.
SYN.—*Kirke's Lemon Pippin.*

LEYDEN PIPPIN, 2nd size, 1st quality, roundish, pale greenish red. Great bearer, good and early, resembling Red Astrachan. August and September. Dessert.

LONDON PIPPIN, 2nd size, 1st quality, oblate. November to April. Culinary and Dessert.
SYN.—*Five Crown Pippin, New London Pippin.*

LORD NELSON (KIRKE'S), 1st size, 1st quality, roundish, red. Very handsome fruit, of good quality, but rather mild. November to February. Culinary and Dessert.

LUCOMBE'S SEEDLING, 1st size, 1st quality, roundish, streaked. Raised by Mr. Lucombe of Exeter, hardy, and a good bearer. October to February. Culinary.

MAIDENS' BLUSH, 1st size, 1st quality, oblate, yellowish red. Remarkably handsome apple, of good quality, and very productive. September to October. Culinary and Dessert.

MARGARET (MILLER), 3rd size, 2nd quality, roundish, yellow. Very early variety, hardy, handsome, and a good bearer. August. Dessert.
SYN.—*Summer Pippin.*

MAY BLOOM.

MARGIL, 2nd size, 1st quality, ovate, yellowish red. Habit of tree very hardy, and bears profusely. November to February. Dessert.
SYN.—*Never Fail, Munche's Pippin.*

M'LEAN'S FAVOURITE, 2nd size, 1st quality, roundish, yellow. The tree of moderate growth, a good bearer, and excellent. October to January. Dessert.

MERE DE MENAGE, 1st size, 1st quality, roundish, red. An excellent kitchen fruit, of good quality, and very showy. October to January. Culinary.

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Apples

MONCRIEFF.
MORCHIN'S CRAB. Culinary.
MONTALIVET (*new*).
NEWTON PIPPIN, YELLOW, 1st size, 1st quality, roundish, yellow. Very handsome and excellent table fruit, hardier than the Green Newton Pippin, and better suited to the climate of Scotland, flavour excellent. Dessert.
SYN.—*Large Yellow Newton Pippin.*
NEW ROCK PIPPIN, 2nd size, 1st quality, round green. Hardy table apple, of good quality, and very productive. January to May. Dessert.
NEW YORK PIPPIN, 1st size, 1st quality, roundish, yellowish green. Makes a good standard, shoots very robust, a good bearer. November to December. Dessert.
NOBLE KING (*new*), large size, and of the best quality, of Continental origin, resembling Autumn Calville, but quite distinct.
NONESUCH, 2nd size, 1st quality, oblate, greenish streaked. Well known variety, hardy, and bears early. September. Culinary.
———— ROUND WINTER, 1st size, 1st quality, round, streaked. November to March. Culinary.
SYN.—*Scarlet Nonsuch, Winter Nonsuch.*
NONPAREIL BRADDICKS, 3rd size, 1st quality, roundish, green. Very good, keeps sound, and an abundant bearer. January to April. Dessert.
SYN.—*Ditton Nonpareil.*
———— DOWNTON, 2nd size, 1st quality, roundish, green russet. Very excellent apple, juice sharp and high flavoured. December to April. Dessert.
———— EARLY, 3rd size, 1st quality, oblate, greenish yellow. Early and excellent, remarkable for its brisk refreshing flavour, has been long in cultivation, flesh tender, juicy, and aromatic. October to December. Dessert.
SYN.—*Hick's Fancy, New Nonpareil.*
NONPAREIL FLAT, 3rd size, 1st quality, oblate, russet. January to April. Dessert.
———— GOLDEN, 3rd size, 1st quality, round, yellow russet. December to February. Dessert.
———— MARTIN, 3rd size, 2nd quality, ovate, yellow russet. December to March. Dessert.
———— OLD, 3rd size, 1st quality, roundish, greenish yellow. Old, but highly esteemed variety, has a peculiar and excellent flavour in good situations. January to May. Dessert.
SYN.—*English Nonpareil, Hunt's Nonpareil.*
———— PITMASTON, 2nd size, 1st quality, roundish, pale green russet. Excellent fruit, of medium size, exceedingly rich in flavour. December to February. Dessert.
———— ROSS, 3rd size, 1st quality, roundish, russet red. Very handsome, with a fenouillet flavour. November to February. Dessert.
———— SCARLET, 2nd size, 1st quality, roundish, red. More handsome and larger variety than the Old Nonpareil, flesh yellowish white, with a rich acid juice. January to March. Dessert.
SYN.—*New Scarlet Nonpareil.*
———— WHITE, 2nd size, 1st quality, roundish, pale green russet. December to February. Dessert.
NORFOLK BEARER (*new*), 1st size, 1st quality, oblate. Hardy, excellent, and a most profuse bearer. December to March. Culinary.
NORTHERN GREENING, 2nd size, 1st quality, oval, green. November to April. Culinary.
SYN.—*Walmer Court.*
———— SPY (*new*), 1st size, 1st quality, conical. New delicious melting variety from America, keeps sound, flesh yellowish white, juicy, with a rich aromatic sub-acid flavour. April to June. Dessert.

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Apples.

NUN, or MELON (*new*), large size, finest quality, allied to the Gravenstein, or roll-formed rattling apples, extensively grown in Germany, and highly recommended by Dr. Leigel. December to April. Dessert and Culinary.

OCHILTREE (*new*), 1st size, 1st quality, round, pale greenish red. Very large and handsome, a good bearer, and very juicy. September to March. Dessert.

ORLEARINE PIPPIN (*new*).

OSLIN, 2nd size, 1st quality, roundish, pale yellow. One of the best of early table apples, with a peculiarly rich aroma, young shoots strong, a fine standard. September. Dessert.

SYN.—*White Oslin, Arbroath Pippin.*

PADLEY'S PIPPIN, 3rd size, 1st quality, roundish, bright reddish yellow. Good bearer, but sometimes apt to shrivel in keeping. December to January. Dessert.

SYN.—*Compote.*

PARADISE PIPPIN, 3rd size, 2nd quality, oblong, yellow. November to December. Dessert.

SYN.—*Ladies' Finger, Paradise White*

PARMENTIER, 2nd size, 1st quality, conical, russet. A good keeper, handsome, and bears well. November to April. Culinary and Dessert.

PASSE ROSE PLATE.

PEARMAIN ADAMS, 2nd size, 1st quality, pearmain, yellowish red. November to February. Dessert.

SYN.—*Norfolk Pippins.*

——— AUTUMN, 1st size, 1st quality, pearmain, yellowish red. September to October. Culinary and Dessert.

SYN.—*Royal Pearmain, American Pearmain.*

——— BARCELONA, 2nd size, 2nd quality, pearmain, yellowish red. November to January. Dessert.

SYN.—*Reinette Rouge, Speckled Golden Reinette.*

——— CLAYGATE, 2nd size, 1st quality, pearmain, yellowish red. November to March. Dessert.

——— HEREFORDSHIRE, 1st size, 1st quality, permain, yellow, greenish red. November to March. Culinary and Dessert.

SYN.—*Old Pearmain, Royal de Angleterre.*

——— HORMEAD, 2nd size, 1st quality, pearmain, yellow. October to March. Culinary and Dessert.

SYN.—*Arundel Pearmain, Hormead Pippin.*

——— (HUBBARD'S), 3rd size, 1st quality, pearmain, pale russet. November to April. Dessert.

——— LAMB ABBEY, 2nd size, 1st quality, pearmain, green yellowish red. January to April. Dessert.

——— (LOAN'S), 2nd size, 1st quality, roundish, green yellowish red. November to January. Dessert.

——— (MANNINGTONS') (*new*), 1st size, 1st quality. Culinary and Dessert.

——— SUMMER, 1st size, 1st quality, pearmain, yellow. September. Dessert.

SYN.—*American, Summer Pearmain.*

——— WINTER, 2nd size, 2nd quality, pearmain, green yellowish red. December to March. Culinary and Dessert.

PEARSON'S PLATE, 3rd size, 1st quality, oblate, yellow greenish red. Very handsome and excellent table apple. December to March. Dessert.

PENNINGTON'S SEEDLING, 2nd size, 1st quality, oblate, yellow russet. Excellent, November to March. Culinary and Dessert.

PINE APPLE PIPPIN, 2nd size, roundish, yellow. September to October. Dessert.

SYN.—*Lucombe's Pine Apple, Pine Apple.*

PLEASE LADY, 2nd size, 1st quality. Hardy and very prolific.

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Apples.

POMME ST. GERMAIN (*new*), 2nd size, 1st quality, oblong, pale yellow. Profuse bearer, very beautiful and good. November to December. Dessert.

POMMEROY, OLD, 2nd size, 1st quality, conical, brownish yellow. November to February. Dessert.

SYN.—*Pommeroy, Taunton.*

POW CAPTAIN, 2nd size, 1st quality. An excellent Scotch apple.

PURSEMOUTH.

QUARRENDEN, DEVONSHIRE, 2nd size, 1st quality, oblate, deep red or purplish. Hardy, very early, and an excellent bearer.

SYN.—*Red Quarrenden, Sack Apple.*

QUEENING FOXELEY.

———— CRIMSON, 2nd size, 2nd quality, calville, red. Very hardy sort, bears well, and very showy. September to November. Culinary.

SYN.—*Scarlet Queening, Summer Queening.*

RAMBOUR D'ETE, 1st size, 1st quality, oblate, pale yellowish red. Fruit large, unequal sided, and very good. August and September. Culinary.

SYN.—*Rambour Franc, Summer Rambour.*

———— D'HIVER, 1st size, 1st quality, oblate, greenish red. Similar to the preceding variety, rather larger, and keeps longer, trees hardy, and strong growers. September to December. Culinary.

RED STREAK, DEVONSHIRE, 2nd size, 1st quality, roundish, streaked. September. Culinary.

———— KEEPING, 2nd size, 1st quality, roundish, streaked. Hardy, handsome, and firm apple. December to April. Culinary.

RED CLUSTER OF CLYDESDALE.

RHODE ISLAND GREENING, 1st size, 1st quality, roundish, green. Fruit very large and handsome, flesh yellow, fine grained, tender, and crisp, with abundance of fine juice. December and April. Culinary and Dessert.

REINETTE BLANCHE, D'ESPAGNE, 1st size, 1st quality, roundish, oblate. Flesh yellowish white, crisp, and tender, with a sugary juice, the tree has the wood, foliage, and vigorous habit of the Fall Pippin. November and March. Culinary and Dessert.

SYN.—*D'Espagne, Cobbet's Fall Pippin.*

———— CROWN (*new*), large size, and finest quality, highly recommended by Diel, bears on young trees, and keeps well without shrivelling. November to April. Dessert.

———— DU CANADA, 1st size, 1st quality, flat and conical, yellowish green. Good bearer, and of excellent quality as a table fruit, although large, fine flavoured, and very handsome. November and April. Culinary and Dessert.

SYN.—*St. Helena Russet, Portugal Russet.*

———— DIEL, 3rd size, 1st quality, oblate, yellowish red. December and March. Dessert.

———— FRANCHE GRAUWE, 2nd size, 1st quality, roundish, brown russet. Very handsome apple, requires a good and open situation. December to April. Culinary and Dessert.

———— GOLDEN, 2nd size, 1st quality. Very superb apple, and a good bearer, trees good growers, and altogether a first rate fruit. October and January. Dessert.

SYN.—*Yellow German Reinette Megginch Favourite.*

———— GRISE, 2nd size, 1st quality oblate, yellow russet. November and March. Dessert.

SYN.—*Belle Fille, Reinette Grise Extra.*

———— MADAM (*new*), large size, finest quality, very prolific bearer, requires a fine soil and situation. December to April. Dessert.

SYN.—*Reinette gros d'Angleterre, Pomme Madame.*

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Apples.

REINETTE SAFFRAN, 2nd size, 2nd quality, conical, yellow russet. August to September. Culinary.

——— SPLENDOUR (*new*), large size, finest quality, most desirable sort, requiring a good soil and situation, bears on very young trees. March to June. Dessert.

SYN.—*Pracht Reinette*

——— STRIPED MONSTROUS, 1st size, 2nd quality, roundish, streaked. November and December. Culinary.

SYN.—*Monstrous Reinette.*

——— PRACHT (*new*). June. Dessert and Culinary.

REINE DES REINETTES (*new*). SYN.—*Queen of the Reinette.*

RIBSTON PIPPIN, 2nd size, 1st quality, roundish. Well known to be of excellent quality, tree vigorous and healthy, in good soils and situations, in others apt to canker, but highly deserves proper treatment. November and March. Culinary and Dessert.

SYN.—*Glory of York*, *Formosa Pippin*, *Travers'*, *Travers' Pippin.*

ROMAINE, 2nd size, 1st quality, roundish yellow. Very excellent table apple, and a good bearer. September. Dessert.

ROMRIL, 2nd size, 1st quality, oblate, pale yellow. Good for kitchen use, and famed as a cider apple. November to February. Culinary and Dessert.

ROSTOCKER (*new*), 1st size, 1st quality, oblate, red. Good bearer, very showy, and a good keeper; the fruit has a strong resemblance to Norfolk Beaufin. November and May. Culinary.

SYN.—*Stetting Rouge.*

RUSSET PINE APPLE (*new*), 1st size, 1st quality, roundish, green, yellowish russet. Excellent, flesh yellow, tender, aromatic, and exceedingly rich. October. Dessert.

——— BOSTON, 1st size, 1st quality. An American apple, flesh greenish, and moderately juicy, with a rich sub-acid flavour. January to April. Dessert.

SYN.—*Roxburgh Russet.*

——— GOLDEN, 2nd size, 1st quality, ovate, russet. Excellent variety, requires a good soil and situation. December to March. Culinary and Dessert.

——— POWELL'S, 3rd size, 1st quality, roundish, russet. November to February. Dessert.

——— ROYAL, 1st size, 1st quality, conical, russet. Excellent bearer, and a first rate apple for kitchen use, apt to become soft in keeping, unless placed in pure sand, where it retains its solidity. November and May. Culinary.

SYN.—*Leathercoat*, *Passe Pomme du Canada*, *Reinette du Canada Plate.*

——— SCARLET.

——— SYKE-HOUSE, 3rd size, 1st quality, oblate, russet. Excellent hardy bearer, and particularly deserving of cultivation. November. Dessert.

SYN.—*Syke House.*

——— WHEELER'S, 2nd size, 1st quality, oblate, greenish russet. November to April. Culinary and Dessert.

RUSSIAN TRANSPARENT.

RYMER, 1st size, 1st quality, roundish, pale greenish red. Another kitchen apple of the highest excellence, keeps firm, and does not shrivel, contains a fine brisk juice. December. Culinary.

SYN.—*Caldwell*, *Green Cossings.*

SACK AND SUGAR, 3rd size, 2nd quality, roundish, yellow. Good bearer, very early and handsome. August. Culinary and Dessert.

SALTOUN PIPPIN (*new*).

SAM YOUNG, 3rd size, 1st quality. From Ireland, of great merit, bears freely, fruit very rich and high flavoured. November. Dessert.

SYN.—*Irish Russet.*

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Apples.

SEEDLING (TRANSON'S) (*new*).
SHEPHERD'S FAME, 1st size, 2nd quality, roundish, yellowish green. Good kitchen fruit, resembles Blenheim Pippin. November to January. Culinary.
SIBERIAN SUGAR, 3rd size. Excellent cider apple, very handsome, flesh orange, and juice very sweet. December. Culinary.
SILVERLING, 1st size, 1st quality, conical, pale green. Tree hardy and a good bearer. November to March. Culinary.
SOPS OF WINE, 2nd size, 1st quality, roundish, red. Good cider apple, flesh inside streaked with red. October to February. Culinary.
SOUTH CAROLINA PIPPIN, 1st size, 1st quality, roundish, yellow. An American apple, very large and handsome. December. Culinary and Dessert.
SPICE APPLE, 2nd size, 2nd quality, conical, russet. Very hardy and a good bearer, fruit slightly aromatic. October. Dessert.
SYN.—*Aromatic Russet, Burntisland Pippin.*
SPITZEMBERG ÆSOPUS, 1st size, 1st quality, oblong, red. In good situations is unsurpassed, as a dessert fruit, by any other variety, flavour brisk. November to January. Culinary and Dessert.
SYN.—*Esopus Spitzemberg.*
———— NEWTON, 2nd size, 1st quality, roundish, yellowish red. Good and handsome skin, smooth, beautiful yellow, with a fine red cheek, flesh yellowish, firm, and sweet. November and February. Culinary and Dessert.
SYN.—*Matchless.*
ST. JULIAN D'ETE. SYN.—*Summer Julian.*
STIRLING CASTLE (*new*), 1st size, 1st quality, roundish. Raised near Stirling, a large and excellent apple. November to December. Culinary.
STONE PIPPIN, 2nd size, 1st quality, oblate, pale yellow. Good keeping apple, hardy, and handsome. January to April. Dessert.
STRAWBERRY WINTER, 2nd size, 1st quality, roundish, straw colour. Excellent and good keeping apple, richly striped with scarlet, flesh of a pleasant sub-acid flavour. November and April. Culinary and Dessert.
SYN.—*Winter Straw.*
———— SUMMER, 2nd size. Almost first size, beautifully striped with yellow and red, habit of tree strong and erect. August to September. Culinary and Dessert.
SYN.—*Early Strawberry.*
STURMER PIPPIN, 2nd size, 1st quality, conical, green yellowish brown. Great bearer, and one of very best of late apples. February to June. Culinary and Dessert.
SYN.—*Sturmer's Pippin.*
SUDBURY BEAUTY, 3rd size, 1st quality, roundish, yellow. Small but very handsome table apple, very rich flavour. October to January. Dessert.
SUMMER STIBBART, 1st size, 2nd quality, conical, yellow. Very distinct variety, makes a fine standard or orchard fruit, almost first quality, and very productive. August. Culinary.
SYN.—*Hative, Avant Tout.*
SUPERINTENDENT (*new*), very large, fine quality, very prolific, one of the best culinary sorts. November to January.
SURPRISE. SYN.—*La Surprise*
TAUNTON FAIRMAID, 2nd size, 1st quality, ovate. November and January. Dessert.
SYN.—*Fairmaid of Taunton.*
TENDERDEN PARK, 3rd size, 1st quality, roundish, yellowish red. October to February. Culinary.
THORLE SUMMER. Excellent, early, and handsome fruit, tree hardy and very compact, makes a fine standard.
SYN.—*Whorle Pippin, Watson's New Nonesuch.*

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Apples.

THORLE WINTER, 2nd size, 1st quality. Culinary.
SYN.—*Winter Thorle.*

TOWER OF GLAMMIS, 1st size, 1st quality, conical, greenish yellow. First rate cooking apple, keeps sound without shrivelling, very large and heavy. November and February. Culinary.
SYN.—*Glammis Castle, Late Carse of Gowrie.*

TRIOMPHANTE (*new*), 2nd size, 1st quality, oblong, red. New and very fine, a good bearer, and has a good appearance. November to January. Dessert.

TRUE YELLOW STETTIN (*new*), large size, finest quality, very prolific, flat-shaped, beautiful new sort. December to June. Dessert.
SYN.—*Yellow Winter Stettin.*

TULIP, 2nd size, 2nd quality, ovate, red. Dutch variety, of very bright red colour, particularly handsome, and a profuse bearer. November and April. Dessert.

VEINY PIPPIN.

VERMILLON D'ESPAGNE (*new*).

VICTORIA HULBERTS, 2nd size, 1st quality. April and May. Culinary.

VIOLETTE POMME, 1st size, 2nd quality, conical, dark red. October and March. Culinary.
SYN.—*Violette de Quartre Gouts, Grosse Pomme Noire d'Amerique.*

WADHURST PIPPIN, 1st size, 1st quality, roundish, yellow brownish red. October to February. Culinary.

WARNER'S KING (*new*), 1st size, 1st quality. Very large and excellent, and a good keeper. December to April. Culinary.

WATTHAM ABBEY SEEDLING, 1st size, 1st quality, roundish, yellow. September to January. Culinary.

WATERLOO PIPPIN (*new*), 1st size, 1st quality. December to May. Dessert.

WESTER (FOWLIS'S) (*new*), 1st size, 1st quality. Very large and excellent.
SYN.—*Fowlis's Wester.*

WILLIAM THE FOURTH. SYN.—*Prince William.*

WINTER MAJETIN, 1st size, 1st quality, roundish, green brownish red. Large and handsome, tree hardy and not liable to insects. January to May. Culinary.

———— COLMAN, 2nd size, 1st quality, roundish, yellowish red. November and April. Culinary.
SYN.—*Norfolk Storing, Norfolk Coleman.*

WOOLMAN'S LONG, 2nd size, 1st quality, oblong, yellow. December and April. Culinary and Dessert.
SYN.—*Ortley, Woolman's Long Keeper.*

WORMSLEY PIPPIN, 2nd size, 1st quality, roundish, pale green. September and October. Culinary and Dessert.
SYN.—*Knight's Codlin.*

WYKEN PIPPIN, 2nd size, 1st quality, oblate, yellow. Small but handsome table apple, a great favourite in Warwickshire, flesh tender and aromatic. December and April. Dessert.
SYN.—*Girken Pippin, Warwickshire Pippin.*

YELLOW BOUGH, 1st size, 1st quality, roundish, yellow. From America, and truly fine, generally much admired as a table apple, and very sweet. August and September. Culinary and Dessert.
SYN.—*Large Early Yellow Bough, Early Sweet Bough.*

YORKSHIRE GREENING, 1st size, 1st quality, oblate, green. Very hardy, fruit sometimes apt to speck, yet much esteemed. October and January. Culinary.
SYN.—*Coat's Yorkshire Goose Sauce.*

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PEARS.

		s.	d.
DWARF, 6 to 9 inch stem	each	/8 to 1	0
DWARF Trained, 6 to 9 inch stem	—	2/6 to 3	6
DWARF on Quince Stocks, 6 to 9 inch stem	—	1/6 to 2	0
DWARF Standard on Quince Stocks, 1 to 2 feet stem	—	1/6 to 3	6
PYRAMIDS on Quince Stocks, 4 to 6 feet, with fruit buds, bushy	—	3/ to 7	6
STANDARD on Free Stocks, 3 to 4 feet stem	—	1/ to 2	6
STANDARD on Free Stocks, 3 to 4 feet stem, with fruit buds	—	3/ to 5	0
RIDER, 4½ to 6 feet stem	—	2/ to 3	0
RIDER Trained, 4½ to 6 feet stem	—	3/6, 5/, 7	6

NEW SORTS AND EXTRA FINE TREES, CHARGED A LITTLE HIGHER.

Pears.

ACHAN BLACK, 2nd size, 2nd quality, obovate, melting. Almost first quality, well suited to the climate of Scotland, makes a good standard, fruit dark green and brownish red. In season, November and December. Used for Dessert.
SYNONYM.—*Grey Achan, Red Achan, Winter Achan, Black Bess of Castle Menzies.*

ADELE D' ST. DENIS (*new*), 2nd size, 1st quality, melting. Very good, bears well on the quince, and forms a handsome pyramid, deserves a wall. October and November. Dessert.

ALBERTINE (*new*), 1st size, 1st quality. Very hardy and handsome, succeeds as a pyramid on the quince, and an excellent bearer. August and September. Dessert.
SYN.—*Alberty.*

AMBROSIA, 2nd size, 1st quality, roundish, obovate, melting. A delicious melting pear, but not a very good keeper, bears well on a standard, fruit green and yellow. September and October. Dessert.
SYN.—*Early Beurre.*

AMIRAL (VAN MON'S) (*new*), 2nd size, 1st quality, melting. Very hardy and excellent, bears well on the quince, double worked, makes a good standard. October and November. Dessert.
SYN.—*Arbre Courbe, Amiral Musque.*

ANDREWS, 2nd size, 1st quality. Rich and fertile.

ANGELIQUE DE BOURDEAUX (*new*), 1st size, 1st quality, conical, melting. New, hardy, and excellent, does as a standard, or on a wall. January and February. Dessert.

——— DE ROME (*new*), 2nd size, 1st quality, obovate, crisp. Hardy, very good quality, makes a fine standard. October. Dessert.

ANGLETERRE NOISETTE, 2nd size, 2nd quality, pyriform, melting. Most productive, makes a fine standard, not unlike Brown Beurre, but not so high in flavour, common in the Paris market. September and October. Dessert.
SYN.—*English Beurre, Beurre, d'Angleterre, Angleterre des Chartreaux.*

ARCHDUC D'ETE (*new*), 3rd size, 2nd quality, pyriform, juicy. Very early and pleasant, fruit juicy, but does not keep long. July. Dessert.
SYN.—*Harvest Pear, Amire Joannet.*

ASTON TOWN, 3rd size, 1st quality, roundish, melting. An excellent standard, bears abundantly, well suited for a cold climate, fruit brownish green, but becomes yellow when ripe. October and November. Dessert.

BARLAND, 3rd size, 1st quality, obovate juicy. Excellent for making perry. Culinary.

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Pears.

BELLE DE BRUXELLES (*new*). September. Dessert.

BELLE ET BONNE, 1st size, 2nd quality, roundish, melting. From Belgium, large, flesh white, with a very sweet and agreeable juice. Standard or Wall. September. Dessert.

SYN.—*Gracieuse.*

BELLISSIME D'HIVER, 1st size, 1st quality, roundish, crisp. Large and handsome, well adapted for stewing, does well as a standard, colour brownish red. November and April. Culinary.

SYN.—*Teton de Venus, Belle Noisette.*

BELMONT, 1st size, 1st quality, obovate, juicy. Excellent for cooking, resembles Althorp Cresane, does as a standard, and bears profusely. November. Culinary.

BERGAMOTTE EASTER, 2nd size, 2nd quality, crisp. Second rate winter dessert pear, keeps well, and very good for stewing, does either on a wall or standard. March and April. Culinary and Dessert.

SYN.—*Winter Bergamotte, Robert's Keeping.*

——— AUTUMN, 3rd size, 1st quality, melting. One of the oldest varieties, has a peculiar and rich flavour, bears best on old trees or on quince, very hardy. October and November. Dessert.

SYN.—*English Bergamotte, York Bergamotte.*

——— GANSEL'S, 1st size, 1st quality, flattish, melting. A well-known and excellent pear from England, raised from the seed of the Autumn Bergamotte, is easily distinguished by its dark grey shoots and mealy leaves. Wall. October and November. Dessert.

SYN.—*Brocca's Bergamotte, Bonne Rouge, Ive's Bergamotte, Gurle's Beurre.*

——— MARCH, 3rd size, 1st quality, roundish, melting. Hardy and excellent, raised by the late Mr. G. A. Knight. March and April. Dessert.

——— CADETTE, 2nd size, 1st quality, obovate, melting. Good bearer, does as a standard, fruit pale green, flesh very juicy. January. Dessert.

SYN.—*De Cadette, Beurre Beuchamps, Beuchamps.*

——— D'HOLLANDE, 2nd size, 2nd quality, roundish, crisp. Excellent for kitchen use, keeps well till June, and after that answers well for table use, flesh white, with abundant duce. Wall. March to June. Culinary.

SYN.—*Holland Bergamotte, Beurre, D'Alencon, Bergamotte de Fougerre, Lord Checney's.*

——— SWISSE, 2nd size, 1st quality, roundish, melting. Very handsome, very juicy, fruit striped with pale yellow or red. Standard or Wall. October. Dessert.

SYN.—*Swiss Bergamotte.*

——— HAMPDENS', 1st size, 2nd quality, roundish, melting. Very large and handsome, fruit juicy and rich, generally producing a good crop, blossom very hardy. Standard. August. Dessert.

SYN.—*Scotch Bergamotte Fingal's Ellanrioch, Bergamotte D'Angleterre.*

——— DE SOULER'S (*new*), 1st size, 2nd quality, obovate, melting. Wall or Standard. November and December. Dessert.

SYN.—*Bonne de Soulers.*

——— D'ETE. September. Dessert.

SYN.—*Early Bergamotte, Summer Bergamotte.*

——— ROUGE (*new*).

——— D'ESPERON (*new*), 3rd size, 1st quality, juicy. New and good, but rather late, succeeds well on the quince. April and May. Dessert.

——— DE PARTHENEY (*new*), 2nd size, 1st quality, crisp. Handsome and good, flesh yellow. April and May. Dessert.

——— LUCRATIF (*new*).

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Pears.

BERGAMOTTE D'AUTOMNE, 1st size, 2nd quality, roundish, juicy. Makes a very handsome tree, fruit very good, does either as a standard or wall tree. September to November. Dessert.

SYN.—*Bergamotte French, True Longueville.*

BEURRE D'AMANLIS. Very large, and one of the best and hardiest of early autumn pears, does well on the quince, and makes a fine standard, even in adverse soils. September. Dessert.

SYN.—*Beurre D'Amanlis Gros.*

——— ANNANAS (*new*). October and September. Dessert.

——— ANTOINETTE (BIVORT) (*new*), 2nd size, 1st quality. Flesh juicy and rich, great bearer. November. Dessert.

——— CLERGEAU (CLERGEAU) (*new*), 1st size, 1st quality. Very large, excellent, and productive. November.

——— D'AREMBERG, 2nd size, 1st quality, obovate, melting. An excellent and well known pear, has been confused with Glout Morceau, but is quite different, succeeds well on the quince, makes a fine pyramid, will do either on a wall or as a standard. December and January. Dessert.

SYN.—*Duc D'Aremberg, Deschamps, L'Orpoline.*

——— BOSC, 1st size, 1st quality, pyriform. An excellent half melting sort, bears well as a pyramid, succeeds on the quince, double worked, requires good soil and situation, bears singly. Wall or Standard. November and December. Dessert.

SYN.—*Calebasse Bosc, Marianne Nouvelle, Bosc's Flaschenbirne.*

——— BROWN. Was long considered the best in France, it has a very rich and vinous flavour, succeeds on the quince, and bears well. Wall or Standard.

SYN.—*Golden Beurre, Beurre du Roi, Badham's Isambert.*

——— DE CAPIAUMONT, 2nd size, 1st quality, obovate, melting. Very handsome and valuable, extremely hardy in all soils and seasons, bears profusely, the branches a little pendant, very ornamental on the quince. Standard. October and November. Dessert.

SYN.—*Calebasse Vase.*

——— DIEL, 1st size, 1st quality, obovate, melting. From Belgium, raised by Van Mons, and named after a friend of his, Dr. Adrien Diel, a German Pomologist, very productive, strong, and pretty, fruit slightly perfumed, succeeds well on the quince as a pyramid. Wall or Standard. October and November. Dessert.

SYN.—*Beurre Incomparable, Diel's Butterbirne, Dillen, Beurre Royal, Dorothee Royale, Grosse Dorothee.*

——— DUVAL (*new*), 2nd size, 1st quality. New from Belgium, raised by M. Duval, habit of tree strong and erect, fruit pale green, flesh white, bears very profusely, and highly deserves general cultivation. Wall or Standard. October and November. Dessert.

——— EASTER, 1st size, 1st quality, obovate, melting. Hardy and good bearer, and one of the best spring pears known; habit of tree upright, with reddish yellow shoots. The fruit on walls might be improved in fine seasons, by being gathered rather earlier and ripened in a warm room. Wall or Standard. January to March. Dessert.

SYN.—*Bergamotte de la Pentacotte, Chaumentelle tres Grosse, Doyenne du Printemps, Beurre Roupe, Beurre de Pques, Bezi Chaumentelle.*

——— DE RANCE, 2nd size, 1st quality, obtuse. Considered to be the best of any late sort known, bears well as a standard, but highly deserves a wall, succeeds on the quince, fruit of excellent flavour. March to May.

SYN.—*Beurre Rance, Herrdenpont du Printemps.*

——— DE WETTEREN (BRECKMAN'S) (*new*). Flesh melting and perfumed. February. Dessert.

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BEURRE SPENCE (VAN MONS), 1st size, 1st quality, obovate, melting. A fruit that has been much confused, but this is the right sort, according to Van Mons's original description. September and October.

SYN.—*Spence.*

———— NAPOLEON, 1st size, 1st quality, obtuse pyriform, melting. Excellent, has many fine qualities as a tree, bears soon and very freely, fruit pale yellowish green, flesh white and very juicy. Wall or Standard. November and December. Dessert.

SYN.—*Napoleon, Medaille, Roi de Rome.*

———— D'AMALIS PANACHEE (*new*), 1st size, 1st quality, obovate, melting. Hardy and excellent, succeeds well on the quince, fruit striped red and yellow. Wall or Standard. September and October. Dessert.

———— D'AUTOMNE (*new*), 2nd size, 1st quality, fine. November. Dessert.

———— DE BENOIST (*new*), 1st size, 1st quality, melting. Good and early, slightly perfumed, and has an agreeable flavour, succeeds on the quince. August and September. Dessert.

SYN.—*Beurre Auguste Benoist, Benoist.*

———— D'ESPERON (*new*), 1st size, 1st quality, melting. Large, hardy, and excellent, succeeds well on the quince as a pyramid or wall. Dessert.

———— GRIS D'HIVER NOUVEAU, 1st quality, roundish, melting. A new sort from France, and considered to be one of the best of late pears, flesh melting and fine grained, very juicy. Wall or Standard. February and March.

———— DUHAUME (*new*). January and February. Dessert.

———— LANGELIER (*new*), 1st size, 1st quality, melting. One of the very best of winter pears, succeeds well on the quince, bears well as a pyramid, and, in good situations, will do as a standard. October and November. Dessert.

SYN.—*Langelier's Beurre.*

———— STERKMANNS (VAN MONS) (*new*), 2nd size, 1st quality, melting. New and hardy, succeeds well as a pyramid on the quince, deserves a wall. January and February. Dessert.

———— SUPERFINE (*new*), 1st size, 1st quality, melting. Very large and excellent, succeeds on the quince, and makes a handsome pyramid. December and January. Dessert.

———— WINTER (RIVERS') (*new*), 1st size, 1st quality, melting. Excellent, new, and hardy, raised by Mr. Rivers from the seed of the Easter Beurre, very rich and vinous, succeeds on the quince double worked. Wall or Standard. February and March. Dessert.

———— VAN MONS (*new*), 2nd size, 1st quality, melting. Very hardy and excellent, succeeds on the quince, and bears well as a pyramid. Standard or Wall. November and December. Dessert.

———— SUPREME (*new*), 2nd size, 1st quality, roundish, melting. New and good, resembling Compt de Lamy, does well as a standard, a great bearer. October and November. Dessert.

———— BRETONNEAU (*new*), 1st size, 1st quality, melting. New and excellent late pear, succeeds on the quince double worked, and very prolific as a pyramid. May and June. Dessert.

———— LÉON LECLERC (*new*), 1st size, 1st quality, melting. New, said to be very large and sweet. November. Dessert.

———— ANANAS, 1st size, 1st quality, melting. Most excellent, succeeds on the quince, bears well as a pyramid. October and September. Dessert.

———— NAVEZ (VAN MONS) (*new*), 1st size, melting. New, described by Van Mons as being the sweetest of all pears. September.

———— D'ANJOU (*new*), 1st size, melting. Large and excellent, succeeds on the quince, and forms a fine pyramid. Wall or Standard. December and January.

SYN.—*Ne Plus Meuris.*

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Pears.

BEURRE ROBIN (*new*), 1st size, 1st quality, melting. New, large, and very hardy, succeeds on the quince, and forms a fine pyramid. Standard or Wall. October and November. Dessert.

——— SPENCE (C. H. Soc.), 1st size, 1st quality, long pyriform, melting. This is the variety grown in the Society's Gardens at Edinburgh, where it ripens its fruit as a standard, habit of tree vigorous, fruit brownish, flesh very rich. Wall or Standard. November and December. Dessert.

——— GIFFART (*new*), 2nd size, 1st quality, melting. New and hardy, one of the very best of early sorts, succeeds on the quince and bears well. Standard. August. Dessert.

——— HARDY (*new*), 1st size, 1st quality, melting. Remarkable for beauty and vigour of growth on the quince as a pyramid. October. Dessert.

——— ADAM (*new*), 1st size, 1st quality, melting. Very large and handsome, of a waxy texture and fine flavour. August. Dessert

——— ENGLEBERG (*new*).

——— DAVIES (*new*), 2nd size, 1st quality, obovate, melting. New and excellent, resembles Passe Colmar, but keeps longer, flesh juicy and good. Wall or Standard. January and February.

——— DE MORTEFONTAINE (*new*), 2nd size, 1st quality, obovate, crisp. New and excellent early autumn pear, well flavoured. Standard or Wall. September and October.

——— ANDUSSON (*new*), 2nd size, 1st quality, melting. New and sweet, hardy and very handsome, succeeds and bears well as a pyramid on the quince. Dessert.

——— DE MONTGERON (*new*).

——— D'ANGLETERRE, 2nd size, 1st quality, obovate, melting. Very handsome, flesh white and buttery, full of juice, very pleasant, though not of high flavour. Wall or Standard. October and November. Dessert.

——— BRUNEAU (*new*).

——— CUTTER (*new*).

——— DE WATERLOO (*new*).

——— LUCRATIF (*new*), 2nd size, 1st quality, obovate, melting. A Flemish sort of the highest excellence, skin pale yellowish green, with a little russet, flesh remarkably juicy, rich and delicious. Standard or Wall. September and October. Dessert.

——— BIEMONT (*new*), 2nd size, 1st quality, roundish, melting. Very rich and excellent, peculiarly fine flavoured. November. Dessert.
SYN.—*Beurre de Beaumont.*

——— BUREAL (*new*).

——— MAGNIFIQUE (*new*), 1st size, 1st quality, obovate to pyriform, melting. Hardy and most excellent, and a good bearer, resembles Beurre Diel, but quite a distinct variety, succeeds on the quince. Wall or Standard. November and December. Dessert.

——— DUMORTIER (*new*), 2nd size, 1st quality, obovate, melting. From Belgium, remarkably high flavoured, fruit a dull yellow, flesh greenish white, juicy and sweet. Standard. September.

——— DE COLVILL (*new*).

——— COLMAR (VAN MONS) (*new*), 2nd size, 1st quality, obovate, melting. Seedling raised by Van Mons, and quite distinct from Autumn Colmar, skin yellowish when ripe, altogether a first rate autumn pear. Standard or Wall. October and November. Dessert.
SYN.—*Beurre D'Alençon Beurre Colmar D'Automne*

——— ST. NICHOLAS (*new*), 2nd size, 1st quality, pyriform, melting Very good fruit, yellowish russet. Standard. November. Dessert.

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Pears.

BEURRE DROUINEAU (*new*), 2nd size, 1st quality, melting. An exceedingly sweet pear, is very hardy, and forms a fine pyramid, and a very good bearer. Standard or Wall. November. Dessert.

——— D'ENGHIEN (*new*).

——— DES BOIS (*new*).

——— D'HARDENPONT (*new*), 1st size, 1st quality, obtuse oval, melting. Resembles Glout Morceau, large and very excellent, skin pale greenish yellow, flesh white and smooth, succeeds well on the quince. Wall or Standard. January to March. Dessert.

——— D'ARDENPONT D'HIVER (*new*), 1st size, 1st quality, obtuse, melting. Excellent winter pear of the same class as the preceding, succeeds on the quince. Standard or Wall. January. Dessert.

——— DE NEMOURS (*new*).

——— ROMAIN (*new*), 2nd size, 1st quality, obovate, melting. Very fine and juicy, of good quality, skin greenish yellow, flesh white, and very great bearer. Standard. September and October. Dessert.

SYN.—*Beurre Romaine.*

——— MOIRET (*new*), 2nd size, 1st quality, melting. Very excellent and sweet, also very hardy, succeeds on the quince, and forms a fine pyramid. Standard or Wall. September and October. Dessert.

——— DE FLANDRE (*new*), 2nd size, 1st quality, obtuse, melting. Resembles Beurre de Rance, of fine quality, and keeps well. Wall or Standard. April and May. Dessert.

——— BRISSAC (*new*), 2nd size, 1st quality, obtuse, melting. Very excellent spring sort, highly deserves general cultivation, flesh yellow and very juicy. Wall or Standard. March and April. Dessert.

SYN.—*Belle de Brissac.*

——— RICHELIEU (*new*).

——— DE BEAULIEU (*new*).

——— APRES NOEL (*new*), 2nd size, 1st quality, melting. Most excellent winter sort, flavour very rich, will do on the quince, and makes a fine pyramid. Wall or Standard. January to April. Dessert.

SYN.—*Belle de Noel, Belle Apres Noel.*

——— DES MOUSCHOUSES (*new*).

——— THOUIN (*new*).

——— SEUTIN (*new*), 1st size, 1st quality, melting. New and very valuable late sort, succeeds well on the quince, and bears well on a pyramid. Standard or Wall. January. Dessert.

——— BRONZE (*new*), 1st size, 1st quality, roundish, melting. Fruit large and excellent, skin dull russet, and becomes red on the side next the sun, flesh white, crisp, juicy, and sweet. Wall or Standard. December or January. Dessert.

SYN.—*Beurre Bronce.*

——— VISER (*new*).

——— CRAPAUD (*new*), 1st size, 1st quality, obovate, melting. Very large, and when ripe, of a fine yellow colour, flesh very buttery and fine grained. Wall or Standard. October and November. Dessert.

BEURRE SIX, 1st size, 1st quality. Very fertile. December.

BEZI D'ESPERON (*new*), 1st size, 1st quality, melting. Very hardy and excellent, succeeds on the quince, and bears well as a pyramid. December and January.

——— DE CAISOY (*new*), 3rd size, 2nd quality, roundish, melting. Very hardy and good keeping sort, rather small, but greatly esteemed by some on account of its peculiar flavour, makes a fine standard. November to March. Culinary and Dessert.

SYN.—*Wilding of Caisoy, Small Winter Beurre, Rousette D'Anjou, Winter Poplin.*

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Pears.

BEZI D'HERY (*new*), 2nd size, 1st quality, roundish, crisp. Excellent for stewing, it derives its name from the forest of Heri in Bretagne, bears most abundantly, fruit yellow, with a reddish blush, flesh tender, juicy, and free from grit, and has a peculiar flavour. Standard. October and December. Culinary.
SYN.—*De Bordeaux*, *Bezi Royal*, *Franzosische Kummelbirne*.
——— DES VETERANS.
——— DE LA MOTTE (*new*), 2nd size, 1st quality, roundish, melting. An old French sort, flesh extremely solid and heavy, has a fine rich flavour, is a good bearer, and very hardy. Standard. October and November. Dessert.
SYN.—*Bein Armudi*, *Beurre Blanc Jersey*.
BELVIDERE.
BELLE ALLIANCE (STRECKMANN) *new*.
——— ET BONNE D'ESPERON (*new*).
——— BLANC PANACHE (*new*).
——— ET BONNE DES HAIES (*new*), 1st size, 1st quality, melting. New variety, and said to be very fine. September. Dessert.
——— ET BONNE D'OULLINS (*new*).
——— ANGEVINE (*new*), 1st size, 1st quality, crisp and juicy. Very large, hardy, and handsome, succeeds on the quince, and makes a fine standard. April. Culinary.
BEAU PRESANT D'ARTOIS (*new*), 1st size, 1st quality, half melting. Very hardy, succeeds on the quince, and bears abundantly. Standard or Wall. September. Dessert.
BISHOP'S THUMB, 1st size, 1st quality, oblong, juicy. Very excellent English sort, very hardy, and bears abundantly as a standard. October. Dessert.
BON CHRETIEN FLEMISH, 2nd size, 1st quality, oblate, crisp and juicy. Excellent cooking sort, an abundant bearer, fruit greenish brown, flesh very tender. Standard. November to March. Culinary.
SYN.—*Bon Chretien Turc*, *Bon Chretien Nouvelle*.
——— D'ETE.
——— FONDANTE, 1st size, 1st quality, roundish, melting. Excellent bearer, very early, fruit greenish brown, flesh yellowish white. Standard. October and November. Dessert.
——— SPANISH, 1st size, 1st quality, pyriform, crisp and juicy. First rate cooking sort, and very handsome when raised on good and warm soil, worthy of a place amongst table fruits, fruit yellow, with a brilliant red on one side, flesh white and crisp. Standard or Wall. November to December. Culinary.
SYN.—*Spina*, *Bon Chretien D'Espagne*.
——— WILLIAMS', 1st quality, obtuse pyriform, melting. Excellent and well-known variety, it is very highly esteemed for its beauty and fine quality, bears very regular and abundant crops, fruit of a clear yellow colour, flesh white, and exceedingly fine flavoured, succeeds on the quince. Standard. August and September.
SYN.—*Bartlett*, *Williams' Pear*.
——— WINTER, 1st size, 2nd quality, irregularly pyriform, crisp. Very large, and if grown on a south wall and in good seasons will be of the first quality. Wall. December to March. Culinary and Dessert.
SYN.—*Bon Chretien D'Auch*, *Bon Chretien D'Hiver*.
——— VERNOIS.
——— MUSQUE NOUVEAU (*new*), 2nd size, 1st quality, pyriform, melting. October and November. Dessert.
BONNE GUSTAVE (ESPERON), 1st size, 1st quality, melting. New, hardy, and excellent, succeeds well on the quince, and bears well as a pyramid. Wall or Standard. December. Dessert.

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Pears.

BONNE ANTE, 2nd size, 1st quality, pyriform, crisp and juicy. Very excellent, resembles the White Doyenne, hardy, and does as a standard. September and October.
SYN.—*Bonne Ente.*

BROOM PARK, 2nd size, 1st quality, roundish, juicy and melting. Raised by Knight, partakes of the flavour of a pine apple, fruit brown, flesh white and juicy, succeeds on the quince double worked. Standard. January. Dessert.

BROUGHAM, 1st size, roundish, melting. Very hardy, handsome, and excellent English variety, fruit yellowish russet, flesh buttery, with an excellent flavour, succeeds on the quince double worked. Standard. November. Dessert.

BURGERMESTER, 2nd size, 1st quality, pyriform, melting. Hardy, good quality, and does well as a standard. November. Dessert.

CALEBASSE, 2nd size, 2nd quality, oblong, crisp. From Belgium, named from its resemblance to a calabash, or gourd; flesh very crisp, sweet, and juicy, and bears well on standards. October. Dessert.
SYN.—*Beurre de Payence, Calebasse D'Holland, Calebasse, double extra.*

——— GROSSE (VAN MONS), 1st size, 1st quality, conical, half melting. Very large, from four to five inches in length, resembles the shape of a conical gourd, fruit yellowish green, reddish grey next the sun, flesh white. Wall or Standard. November and December. Dessert.
SYN.—*Monstreuse Calebasse, Grosse Calebasse.*

CAILLOT ROSAT, ENGLISH, 1st size, 1st quality, obtuse, pyriform, juicy. Very large and excellent, habit of tree erect, hardy, early, and a good bearer, flesh juicy and rich. Standard. August. Dessert.
SYN.—*King.*

CALHOUN (EDWARDS) (*new*), 2nd size, 1st quality. Very fertile. Dessert.

CANNING, 1st size, 1st quality, melting. Excellent for spring use, the fruit resembles Easter Beurre, but the habit of the tree is more robust and hardy. Standard or Wall. February and March. Dessert.

CATILLAC, 1st size, 1st quality, turbinate, crisp. An old French baking sort, very large, and of good quality, flesh of a fine red colour, does as a standard or dwarf quenouille. December to April. Culinary.
SYN.—*Bell Pear, Grand Monarque, Gross Mogul Katzenkopf.*

CHAPTAL, 1st size, 1st quality, obovate, crisp. Very handsome and good culinary sort, very hardy, and a good bearer. Standard. December to April. Culinary.

CHARLES OF AUSTRIA (*new*). Raised by Van Mons in Belgium, very large and handsome, hardy, and a good bearer, fruit greenish yellow, flesh white, tender, and juicy. Standard or Wall. Dessert.
SYN.—*Charles D'Autriche.*

CHRISTINE (*new*).

CHAT-BRULE, 2nd size, 2nd quality, roundish, crisp. Very hardy French variety, free grower and good for kitchen purposes. Standard. December and January. Culinary.
SYN.—*Burnt Cat.*

CHAUMONTEL, 1st size, 1st quality, oblong, melting. Takes its name from the village of Chaumontelle, in France, requires a good warm soil to bring it to perfection, in Jersey it grows to a very large size, succeeds on a quince as a pyramid. Wall or Standard. November to March. Dessert.
SYN.—*Bezi de Chaumontel, Beurre D'Hiver, Oxford Chaumontel.*

——————— NOUVEAU (*new*).

——————— PYRAMIDAL (*new*).

CITRON DES CARMES, 2nd size, 1st quality, obovate, juicy and melting. One of the finest of early French pears, deserves a place in every collection, tree fruitful and strong, with large and erect olive shoots, fruit yellowish green, flesh white and juicy, with a very sweet flavour. Standard or Wall. July. Dessert.
SYN.—*Madeleine Rose Angle Early, Magdalene.*

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Pears.

CITRON DES CARMES, PANACHE, 2nd size, 1st quality, obovate, juicy and melting. Resembles the preceding in every respect, with the exception of its being striped on the outside with green and yellow. July. Dessert.
SYN.—*Striped Madeleine.*

CLAREMONT (*new*). October and November. Dessert.

COLMAR, 2nd size, 1st quality, obtuse pyriform, melting. Excellent old sort, rather tender, requires a wall and good situation, which it highly deserves, fruit light yellow colour, flesh white. November to February. Dessert.
SYN.—*D'Auch, De Manne, Colmar Dore Incomparable.*

——— AUTUMN, 2nd size, 1st quality, obtuse pyriform, melting. Flemish sort, very good bearer as a standard, fruit pale green with a little russet, flesh buttery and rich flavoured. Standard. October and November. Dessert.

——— GRIS NOUVEAU (*new*).

——— D'ETE, 2nd size, 1st quality, juicy. Very excellent for Autumn use, succeeds exceedingly well on the quince, bears profusely as a pyramid. Standard or Wall. September. Dessert.

——— NEILL, 1st size, 1st quality, obovate melting. According to Thomson, this variety is a good bearer, fruit large. Standard. October. Dessert.

——— VAN MONS (*new*).

——— BONNET (*new*).

——— D'AREMBERG, 1st size, 1st quality, obtuse pyriform, melting. A large and fine fruit, similar in shape to Williams' Bon Chretien, tree vigorous, does well as a pyramid or on a north-west wall, succeeds on the quince, is quite hardy, and a great bearer. Standard or Wall. December. Dessert.

——— PASSE, 1st size, 1st quality, obovate, melting. Excellent Belgian winter pear, tree of a strong vigorous growth, and a free bearer, fruit yellow when ripe, flesh yellowish white, very juicy, succeeds on the quince. Wall or Standard. December and January.
SYN.—*Beurre D'Argenson, Passe Colmar Gris, D'Ananas, Chapman's Souveraine, Colmar Epineaux.*

——— PASSE DORE, 1st size, 1st quality, melting. There are two varieties of this pear, the Grise and Dore, the latter is finest, succeeds on the quince, and forms a fine prolific pyramid. Wall or Standard. October and November. Dessert.
SYN.—*Passe Colmar Dore.*

——— PASSE MUSQUE, 1st size, 1st quality, melting. New and excellent variety of the preceding fruit, highly perfumed, succeeds on the quince. Wall or Standard. December. Dessert.
SYN.—*Passe Colmar Musque*

——— D'HIVER (*new*).

COLUMBIA, 1st size, 1st quality, obovate, juicy and melting. From America, and one of the best varieties, is likely to become very popular, is large, handsome, and very productive, when fully ripe, of a golden yellow, tinged with orange, flesh white and juicy, with a rich aromatic flavour. Standard or Wall. November to January. Dessert.

COLOREE D'AOUT (VAN MONS) (*new*), 2nd size, 1st quality. Flesh fine and perfumed. August and September. Dessert.

COMPTE DE FLANDRE, 1st size, 1st quality, melting. Very large, hardy, and handsome, flesh fine grained, and very fine flavoured, succeeds on the quince. Wall or Standard. December. Dessert.

——— DE LAMY, 2nd size, 1st quality, roundish, melting. Very rich and excellent, young shoots strong and of a dark brownish colour, fruit yellow and red on the one side, flesh white and buttery. Standard. October. Dessert.
SYN.—*Beurre Curtes, Dingler, Marie Louise the Second, Marie Louise Nova.*

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COMPTE DE PARIS (BIVORT) (*new*), 2nd size, 1st quality. Flesh rich, juicy, and perfumed. October. Dessert.

COMPTESSE DE LUNAY, 2nd size, 1st quality, melting. Very beautiful and excellent new sort. September and October. Dessert.

CRASSANE, 1st size, 1st quality, roundish, juicy, and melting. A celebrated French pear, requires a good soil and situation to bring it to perfection, fruit greenish yellow, with a little russet, it has a very pleasant flavour. Wall. November and December. Dessert.

———— ALTHORPE (KNIGHT'S), 2nd size, 1st quality, roundish obovate, melting. Very hardy and excellent fruit, pale green with russet dots, one side a little tinged with brown, flesh white and slightly perfumed, good bearer as a standard. October and November. Dessert.

———— D'ETE (*new*).

———— WINTER, 1st size, 1st quality, turbinate, melting. Hardy as a standard in good situations, otherwise a wall with a west aspect suits it best, a good bearer. January. Dessert.

CRAWFORD, 2nd size, 2nd quality, obovate, melting. Exceedingly hardy, well adapted for cold and backward situations, fruit light yellowish brown, flesh white, sweet, and rich. Standard. August. Dessert.

SYN.—*Lammas Pear (of Scotland)*

CUISE MADAME D'HIVER (*new*).

SYN.—*Winter Jargonelle.*

———— D'AUTOMNE (*new*).

SYN.—*Autumn Jargonelle.*

CUSHING, 2nd size, 1st quality. Very fertile. September.

DALLAS (EDWARD'S) (*new*), 2nd size, 1st quality. Very fertile. November.

D'AMOUR, 3rd size, 2nd quality, obovate, juicy, and melting. Small French pear, it is exceedingly productive, flesh white, juicy, tender, and rich flavoured. Standard. September. Dessert.

SYN.—*Ah! Mon Dieu, D'Abondance.*

DE LAMARTINE (BIVORT) (*new*), 2nd size, 1st quality. Vigorous and fertile. October and November. Dessert.

DEARBORN'S SEEDLING, 2nd size, 1st quality, turbinate, melting. Most excellent sort from America, raised at Boston, bears abundantly and very early, fruit hardly second size, of a clear yellow colour, flesh white, very juicy, and rich. Standard. August and September. Dessert.

DELICE D'HARDENPONT, 2nd size, 1st quality, melting. Flemish pear, raised by Counsellor Hardenpont of Mons, very rich fruit, bears well as a pyramid on the quince. Standard or Wall. October and November. Dessert.

———— DE JODOIGNE (BOUVIER), 1st size, 1st quality, melting. An excellent autumn sort, very hardy, succeeds on the quince, and bears well as a pyramid. Standard. November. Dessert.

———— D'ALOST (*new*).

DESIRE VAN MONS (*new*).

DE BEUZARD.

DE MALTA, OR CAILLOT ROSAT D'HIVER.

DIX (*new*). November and December. Dessert.

DE SPOELBERG, 2nd size, 1st quality, melting. Very hardy, rich, and excellent autumn pear, succeeds on the quince double worked. Standard or Wall. November. Dessert.

SYN.—*Vicompte de Spoelberg.*

DRAPIEZ, 2nd size, 1st quality, obovate, juicy, and tender. Very hardy, handsome, and excellent autumn table fruit, succeeds on the quince, and makes a fine standard. October. Dessert.

SYN.—*Drapiez D'Ete.*

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Pears.

DRUMMOND, 2nd size, 1st quality, pyriform, juicy. Very hardy, suitable for cold or exposed situations, fruit sweet, but does not keep, tree vigorous and healthy, makes a fine standard. October. Dessert.

SYN.—*Charnock, Scotch Charnock.*

DR. BOUVIER (VAN MONS), 1st size, 1st quality, melting. Very excellent and large winter sort, hardy, tree inclined to be thorny, succeeds on the quince double worked. Standard or Wall. February and March. Dessert.

DOYENNE BOUSSOCH, 1st size, 1st quality, melting. Very hardy pear, succeeds well on the quince, and forms a fine pyramid. September and October. Dessert.

——— CROTTE, 2nd size, 1st quality, round, melting. Very handsome and excellent, succeeds on the quince, and bears profusely as a pyramid. Wall or Standard. November. Dessert.

——— D'ETE, 2nd size, 1st quality, melting, juicy. Very early, and bears abundantly, but the habit of tree quite different from a Doyenne. M. Poiteau remarks that this tree has been grown at Nantes for many years, though till lately little known in Paris, flesh white and very rich. Standard. August. Dessert.

——— D'EFFAY, 2nd size, 1st quality, obovate, melting. New and very excellent, succeeds on the quince, and forms a very handsome pyramid. Wall or Standard. November. Dessert.

SYN.—*Doyenne Defais.*

——— GOUBAULT, 1st size, 1st quality, melting. New and very good, hardy, succeeds well on the quince, habit of tree thorny. Standard or Wall. January to March. Dessert.

——— GRAY, 2nd size, 1st quality, melting. Resembles the White Doyenne in flavour and general appearance, with the exception of the colour of the skin, it keeps a little longer, and is very handsome, and considered by many to be the best of the two, flesh white, rich flavoured. Wall or Standard.

SYN.—*Doyenne Gris, Red Doyenne, Grey Dean's Doyenne Galeaux, Doyenne D'Automne, St. Michel Dore.*

——— D'HIVER, or D'ALENCON, 2nd size, 1st quality, juicy and melting. Very excellent late sort, succeeds on the quince. January to May. Dessert.

——— NOUVEAU, 2nd size, 1st quality, obovate, tender, and juicy. New and very excellent, succeeds on the quince, very productive as a pyramid. Wall or Standard. April. Dessert.

——— DES QUATRE SAISONS (*new*). Dessert.

——— SIEULLE, 2nd size, 1st quality, melting. Very hardy and excellent, succeeds on the quince, and forms a fine pyramid. Standard or Wall. December and January. Dessert.

——— WHITE, 2nd size, 1st quality, melting. One of the finest autumn pears when in a good situation, fruit clear pale yellow, regularly sprinkled with small dots, and often fine red next the sun, flesh white, fine grained, and very high flavoured, also a good bearer. Standard or Wall. September to November. Dessert.

SYN.—*Doyenne Blanc, White Beurre, Dean's Snow Pear, Pine Pear, Warwick Bergamotte, White Autumn Beurre.*

DUCHESS D'ANGOULEME, 1st size, 1st quality, obtuse, melting. Splendid table fruit, said to be found in a hedge-row near Angers, succeeds on the quince as a pyramid. Wall or Standard. November and December. Dessert.

DUCHESSE DE BERRI, 2nd size, 1st quality, juicy and melting. New and very handsome table fruit, very productive, does not do very well as a pyramid, on account of its pendulous habit, requires a wall or trellis, flesh fine. Wall or Standard, August and September. Dessert.

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Pears.

DUCHESS DE MARS, 2nd size, 1st quality, obovate, melting. A winter sort, rather below second size, but remarkably high flavoured and sweet, and a very abundant bearer. Standard or Wall. December and January. Dessert.

——— D'ORLEANS, 1st size, 1st quality, long pyriform, melting. Very fine fruit, resembles Gansell's Bergamotte in flavour, fruit golden yellow, dotted with a little russet, flesh buttery, rich, sugary, and aromatic, bears well on the quince. Standard or Wall. October. Dessert.

DUNMORE, 1st size, 1st quality, oblong obovate. Skin greenish, dotted, and speckled with brownish red russet, flesh yellowish white, buttery, and melting, with a rich high flavour, large and truly admirable, raised by Knight, strong growing, and very productive, its blossoms resisting even severe frosts. September and October. Dessert.

ELTON, 2nd size, 1st quality, oval, crisp. This variety was found in an orchard in the parish of Elton, Hertfordshire, the original tree was supposed, by Mr. Knight, in 1812, to be 170 years old, very hardy, and seems best suited for a standard, fruit of an excellent flavour, and generally either without cells or seed. Standard. September and October. Dessert.

ELISA D'HEYST (ESPERON) (*new*), 2nd size, 1st quality, melting. Excellent late pear, requires a warm light soil and situation, succeeds on the quince double worked. Wall. March and April. Dessert.

EMERALD, 2nd size, 1st quality, obovate, melting. A Belgian variety, resembling Glout Morceau, flesh very sweet. Standard or Wall. November and December. Dessert.

EYEWOOD, 2nd size, 1st quality, oblate, melting. Very sure bearer, the tree is hardy and vigorous, fruit russety, flesh buttery and rich. Standard. October and November. Dessert.

FIGUE, 2nd size, 1st quality, oblong, juicy. Very hardy, quality good, productive, but soon decays, fruit juicy and sweet. Standard. September. Dessert.

SYN.—*Pistolette*, *Knevett's*.

——— DE NAPLES, 1st size, 1st quality, oblong. Superior to the preceding, habit of tree strong and vigorous, makes a good Standard. Dessert.

FLEMISH BEAUTY, 1st size, 1st quality, obovate, melting. Most splendid, and very handsome, measures twelve inches in circumference in some parts of America, it is of the finest quality; the fruit should be gathered before being fully ripe, and kept in the house, which preserves the flavour, bears early. Wall or Standard. September and October. Dessert.

SYN.—*La Belle de Flanders*, *Bouche Nouvelle*, *Brilliant*, *Imperatrice de France*.

FLEUR DE NEIGE (VAN MONS) (*new*).

FONDANTE D'AUTOMNE, 2nd size, 1st quality, obovate, melting, and juicy. Excellent Flemish pear, bears abundantly, fruit pale yellowish, flesh green, remarkably juicy, rich, and sweet. Standard or Wall. September and October. Dessert.

SYN.—*Belle Lucrative*.

——— DES CHARNEUSES (*new*).

——— DU BOIS, 2nd size, 1st quality, obovate, juicy, and melting. Resembles the Passe Colmar, is almost equal to it in flavour, but keeps longer, fruit greenish yellow, flesh very juicy. Standard or Wall. December to February. Dessert.

——— DES CHARMENSIER (*new*), 1st size, 1st quality, melting. Most excellent, as remarkable for its fruitfulness as for its fine quality, shoots rather pendant. Standard or Wall. Dessert.

——— DE MALINES (ESPERON) (*new*), 2nd size, 1st quality, melting. New and hardy, succeeds on the quince, and forms a very prolific pyramid. Standard or Wall. January and February. Dessert.

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Pears.

FONDANTE VAN MONS (*new*), 2nd size, 1st quality, roundish, melting. Excellent, raised by Van Mons, bears abundantly, fruit pale yellow, flesh white and rich. Standard or Wall. November. Dessert.

——— MILLOT (*new*), 2nd size, 1st quality, melting. New, hardy, and excellent, succeeds on the quince, forms a fine pyramid, fruit very rich. Standard or Wall.

FORELLE, 2nd size, 1st quality, oblong, melting. From Germany, beautifully speckled all over, flesh white and very tender. Wall or Standard. November to January. Dessert.

SYN.—*Poire Fruite*, *Forellen-Birne.*

FRANC REAL D'HIVER, 2nd size, 1st quality, roundish obovate, crisp. Excellent for cooking and stewing, flesh becomes very tender and takes a pretty light purple colour. Standard. December to March. Culinary.

——— REAL SUMMER, 2nd size, 1st quality, obovate, melting. One of the best of summer pears, very fine flavoured, and a hardy and good bearer, flesh white. Standard. September. Dessert.

SYN.—*Franc Real D'Ete.*

FRANGIPANNE (*new*), 2nd size, 2nd quality, pyriform, crisp. Good for culinary purposes, and when in a good situation is of excellent quality, has a peculiarly sweet perfume and very good flavour. Standard. November. Culinary.

FREDERICK OF PRUSSIA, 2nd size, 1st quality, turbinate, juicy, and tender, Very hardy, quality good, bears freely, taste very pleasant. Standard. October. Dessert.

SYN.—*Friederich Von Preussen*, *Frederick de Prusse.*

——— DE WURTEMBERG (*new*), 1st size, 1st quality, pyriform, juicy, and melting. Large, hardy, handsome, and excellent, raised by Van Mons, bears early, deserves extensive cultivation, fruit deep yellow when ripe, rich crimson next the sun, flesh white and juicy. Standard or Wall. September and October. Dessert.

GARNONS', 1st size, 2nd quality, oblong, melting. Very hardy and productive. Standard. January. Dessert.

GENERAL DUTILLEUL (BIVORT), 1st size, 1st quality. November and December.

GILOGIL, 1st size, 1st quality, roundish, crisp. Large and showy French pear, good for culinary purposes and preserving, a good bearer. Standard. November and December. Culinary.

SYN.—*Gilegile Poire a Goubert.*

GIRARDON (*new*). SYN.—*Girardin.*

GENDESHEIM, 1st, size, 1st quality, obtuse, melting. Hardy and excellent, habit of tree rather robust and upright, makes a fine standard. October and November. Dessert.

SYN.—*Verlain*, *Verlaine D'Ete.*

GLOIRE DE CAMBRONNE, 2nd size, 1st quality, oblong, juicy. From France, of good quality, succeeds on the quince, very productive, juicy, and rich. Standard. October. Dessert.

GLOUT MORCEAU. Generally admitted to be one of the finest of Flemish winter pears, habit of tree spreading, with rather pendant branches, fruit pale greenish yellow, flesh white and very rich. Wall or Standard.

SYN.—*Linden D'Automne*, *Glout Morceaux*, *Roi de Wurtemberg*, *Beurre D'Hiver Nouvelle*, *Colmar D'Hiver*, *Glouz Morceaux.*

GRAND SOLEIL (ESPERON) (*new*), 1st size, 1st quality, half melting. New late fruit, succeeds well on the quince, requires a warm soil and situation. Wall or Standard. December to March. Dessert.

GREEN CHISEL, 3rd size, 2nd quality, round, juicy. Similar to the preceding variety, very hardy and productive, quite distinct from Sucre Verte, or Green Sugar. Standard. August. Dessert.

SYN.—*Sugar Pear.*

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GREEN PEAR OF YAIR, 2nd size, 2nd quality, obovate, juicy. An old Scottish fruit, remarkable for its hardiness and productiveness, fruit very juicy. Standard. September. Dessert.
SYN.—*Green Yair.*

GROS DILLON (*new*). 1st size, crisp, and juicy. Very excellent and hardy, from Flanders, well adapted for a standard orchard tree, fruit greenish yellow, flesh white, and sweet flavoured. October.
SYN.—*Alexander of Russia.*

—— HALIVEAU (*new*).

—— JARGONELLE (*new*). SYN.—*Beurre de Paris, Beau Present.*

HENRY THE FOURTH, 2nd size, 1st quality, pyriform, tender. Most excellent, hardy, and productive fruit, pale or dull yellow, flesh white, with a very high flavoured juice. Standard. September and October. Dessert.
SYN.—*Jacquin, Henri Quatre.*

HESSEL, 2nd size, 1st quality, obovate, juicy. An old Scottish fruit, enormously productive, habit of tree rather pendant, fruit yellowish green, dotted all over, flesh white, with a very pleasant saccharine flavour. Standard. September. Dessert.
SYN.—*Hazel.*

HILDESHEIM WINTER BERGAMOTTE. December and March. Dessert.

INCOMPARABLE, HACON'S 1st size, 1st quality, roundish, melting. Excellent English pear, raised by Mr. Hacon of Downham Market, Norfolk, habit of tree hardy and productive, branches rather pendant, fruit dull yellow, dotted and streaked with russet, flesh white, and of the finest quality. Wall or Standard. November to January. Dessert.
SYN.—*Downham Pippin.*

JALOUSIE DE FONTENAY VENDEE, (*new*), 2nd size, 1st quality, obtuse pyriform, melting. Excellent French sort, fruit dull yellow and green, dotted with russety red, flesh white and rich. Wall or Standard. October. Dessert.

JAMINETTE, 2nd size, 1st quality, obovate, melting. Very hardy and excellent winter fruit, was raised from seed by M. Jaminette of Metz, fruit pale green when at maturty, flesh white, very sugary, and rich. Standard. November to January. Dessert.
SYN.—*Beurre D'Austraisie, Colmar Jaminelle, D'Austraisie, Hardenpont du Printemps.*

JARGONELLE (ENGLISH), 1st size, 1st quality, pyriform, juicy, and melting. A well-known and excellent summer pear, hardy, and very productive, habit of tree almost distinct from all others, young branches very strong, leaves when young coated all over with down, flesh yellowish white, and very juicy. Wall or Standard. August and September. Dessert.
SYN.—*Sweet Summer, Saint Lambert, Epergne, Poire des Tables des Princes, True Jargonelle, Real Jargonelle.*

—————— (FRENCH), 2nd size, 2nd quality, obovate, crisp. A handsomer and lighter coloured pear than the preceding, but inferior in quality, habit of tree strong and erect, makes a fine standard or orchard tree. August. Dessert.
SYN.—*Bellissime Jargonelle, Bellissime D'Ete, Bellissime Supreme, Sabine D'Ete, Red Muscadel, Vermilion D'Ete.*

JEAN DE WITTE, 2nd size, 1st quality, obovate, melting. Excellent winter table fruit, and a good bearer. Wall or Standard. February. Dessert.

JON D'HIVER, 2nd size, 1st quality, pyriform, melting. Very hardy, handsome, and good winter fruit, bears abundantly as a pyramid or standard. Standard or Wall. January. Dessert.

JOSEPHINE DE MALINES (ESPERON) (*new*), 2nd size, 1st quality, obovate, melting. Excellent, late, with a rich aromatic flavour, habit of tree vigorous. Wall or Standard. February to May. Dessert.

KERMES PINE (*new*), 1st size, 1st quality. Said to be very fine. Dessert.

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Pears.

KING EDWARD, 1st size, 1st quality, pyriform, melting. Large and very handsome, requires a good season to bring it to perfection as a standard, fruit yellowish russet, with a fine red cheek, flesh yellowish and very good. Standard, but deserves a wall. September and October. Dessert.

SYN.—*Jackman's Melting.*

KNIGHT'S D'HIVER, 1st size, 1st quality, obovate, crisp. Large and excellent, succeeds on the quince, and bears well, fruit fine flavoured. Standard. January to March. Dessert.

SYN.—*Knight's Nouvelle, Late Van Mons.*

KNIGHT'S MONARCH, 1st size, 1st quality, obovate, melting. Considered by Knight superior to all others, tree a strong grower, and bears abundantly, young shoots of a yellowish colour (there is a spurious variety, with dark violet shoots). Standard or Wall. January. Dessert.

LA FORTUNEE, 3rd size, 1st quality, roundish, juicy. Small russet pear, raised by M. Parmentier of Enghein, flesh white, does best on quince. Standard or Wall. December to April. Dessert.

SYN.—*La Fortune de Paris, La Fortune de Parmentier.*

LEON LE CLERC (VAN MONS), 1st size, 1st quality, obovate, half-melting. Of the largest size, excellent for cooking, flesh white, juicy, with a pleasant flavour. Standard or Wall. February to April. Culinary and Dessert.

SYN.—*Leon de Clerc de Laval.*

LEWIS, 2nd size, 1st quality, roundish, obovate, melting. An excellent winter pear from America, and bears enormous crops, fruit adheres closely to the tree and not liable to be blown off nor hurt by early frosts, flesh yellowish white, and a very rich flavour. Standard. November to February. Dessert.

LEOPOLD (BIVORT), 2nd size, 1st quality. Flesh delicious and fine. Dessert.

LIEGEL'S DESCHANT PEAR (*new*). November. Dessert.

LOUISE BONNE OF JERSEY, 1st size, 1st quality, pyriform, melting. Raised near Avranches in France, and one of the very best of autumn pears, very hardy and productive, fruit pale green, brownish red next the sun, and dotted with grey, flesh greenish white, with a rich excellent flavour. Standard or Wall. September and October. Dessert.

SYN —*Louise Bonne de Jersey, Louise Bonne D'Avranches, Bonne Louise D'Araudore, William the Fourth.*

MANSUETTE, 1st size, 1st quality, oblong, half melting. Excellent autumn French pear, succeeds well on the quince, and makes a prolific pyramid. Standard or Wall. September and October. Dessert.

SYN.—*Beurre de Seymour, Solitaire.*

MARIE LOUSIE. Most excellent, raised from the seed by the Abbe Duquesne of Belgium in 1809, and its fruit first sent to England by Van Mons in 1816, habit of tree hardy and easily distinguished by its rather crooked and declining branches, with narrow leaves, rich yellow fruit when at maturity, mottled with russet next the sun, flesh white, with a red saccharine flavour. Standard or Wall. Dessert.

SYN.—*Forme de Marie Louise, Marie Chretienne, Princess de Parme, Braddick's Field Standard.*

——— LOUSIE (VAN MONS) (*new*), 1st size, 2nd quality, pyriform, melting. Very large, and in some seasons the fruit is of first quality, and very productive, bearing enormous crops, habit of tree erect, with strong dark coloured shoots, fruit smooth, yellow, brownish red on the side next the sun, flesh at first melting and juicy, but soon decays. Standard or Wall. September and October. Dessert.

MARECHAL DE COUR (VAN MONS), 1st size, 1st quality, new and fine. Habit of tree vigorous and very productive, described by Van Mons as being the finest pear he had ever raised. November. Dessert.

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Pears.

MASCON'S COLMAR (*new*). January and February. Dessert.

MESSIRE JEAN, 2nd size, 2nd quality, turbinate, crisp. Rich sugary old French pear, but rather coarse grained, fruit rough yellow, covered with brown russet, flesh white, crisp, and juicy, with a sweet and rich flavour, in deep warm soils is sometimes very good. Standard. November and December. Dessert.

SYN.—*John, Messire Jean Dore, Monsieur John, Messire Jean Blanc.*

MONSIEUR LE CURE (*new*), 1st size, 1st quality. A very large variety, flesh melting and very rich. November to January. Dessert.

MONTEITH, JOHN, 2nd size, 2nd quality, obovate, melting. Very hardy and productive, habit of tree vigorous, fruit of a brownish green colour, flesh white, flavour peculiar and rich. Standard. October and November. Dessert.

MOOR-FOWL EGG, 2nd size, 2nd quality, roundish, juicy. Scotch pear, very hardy and productive, makes a fine standard, fruit dull green, brownish red on one side, flesh yellowish white, soft, and very sweet. October and November. Dessert.

SYN.—*Little Swan's Egg, Knevett's New Swan's Egg.*

——— EGG, GALSTON, 2nd size, 2nd quality, roundish, juicy. Very distinct from the preceding, habit of tree very robust and upright, makes a fine standard, and in some situations deserves a wall. October and November. Dessert.

MUSCAT, ROBERT, 3rd size, 1st quality, turbinate, juicy, and tender. Very early and excellent, does not keep well, remains good only for a few days, fruit clear greenish yellow, flesh white, tender, juicy, and a very pleasant flavour. Standard. August. Dessert.

SYN.—*Poire á la Reine, St. Jean Musquee Gros, Early Queen, Musk Robine.*

NAPOLEON D'HIVER (*new*).

NEILL, 1st size, 2nd quality, obovate, melting. Very distinct from the following variety, habit of tree more slender, resembles, very much that of the Colmar. Standard. September and October. Dessert.

SYN.—*Colmar Bosc.*

——— VAN MONS, 1st size, 1st quality, obovate, melting. Large and handsome, raised from seed by Van Mons, and named after Dr. Neill of Edinburgh, fruit pale yellow, thinly marked with russet flesh, and very sweet, juicy, and well flavoured. Standard. September and October. Dessert.

SYN.—*Beurre Neill, Poire Neill.*

NELIS WINTER, 2nd size, 1st quality, obovate, melting. Most excellent Flemish winter pear, very hardy and productive, always ripens well and in succession, fruit yellowish green, dotted with russet, flesh yellowish white, fine grained, with plenty of juice, of a rich saccharine and aromatic flavour. Wall or Standard. December to January. Dessert.

SYN.—*Nelis D'Hiver, Bonne de Malines, La Bonne Malinoise, Milanaise Duvelier, Beurre de Malines, Etourneau.*

NE PLUS MEURIS, 2nd size, 1st quality, roundish, melting. From Belgium, raised by Van Mons, and named after Pierre Meuris, his gardener at Brussels, flesh yellowish brown, covered with dull russet, with a rich sweet flavour. Standard. January to March. Dessert.

NOUVEAU POITEAU (VAN MONS) (*new*), 1st size, 1st quality, melting. Very large and excellent pear, succeeds well on the quince, and bears very well as a pyramid. Standard or Wall. November. Dessert.

——— SIMON BOUVIER (VAN MONS) (*new*), 1st size, 1st quality, melting. New and very valuable, succeeds well on the quince, and makes a handsome pyramid. Standard or Wall. March and April. Dessert.

ONONDAGA, or SWAN'S ORANGE (*new*), 1st size, 1st quality, melting. New and excellent, from America, hardy and very productive, succeeds on the quince double worked. Standard. October and November. Dessert.

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Pears.

ORANGE ROUGE.

EMILA D'HEYST (BERCKMAN'S) (*new*), 1st size, 1st quality. Flesh very rich and fine. October. Dessert.

PAQUENCY (*new*), 2nd size, 1st quality, obovate, melting. New and excellent French pear, fruit dull yellow, when ripe, marked and dotted with russet, flesh white and very sweet, with a rich perfume, succeeds on the quince. Standard or Wall. October and November. Dessert.

PARMENTIER, 2nd size, 2nd quality, obovate, melting. Hardy and very showy, streaked all over with bright red. Standard. September and October. Dessert.

POMME POIRE, 2nd size, 1st quality, oblate, melting. Fruit of a brownish colour, tree hardy, and a good bearer. Standard. October and November. Dessert.
SYN.—*Pomoise.*

POIRE PECHE (ESPERON) (*new*), 1st size, 1st quality, melting. New and excellent, has a little of the flavour of the peach, succeeds on the quince double worked. Standard or Wall. October. Dessert.

——— DE BAVAY.

——— HENRI (BIVORT) (*new*), 1st size, 1st quality. Flesh fine, sweet, and perfumed. September. Dessert.

——— JULES (BIVORT) (*new*), 1st size, 1st quality. Flesh fine, very juicy, and perfumed. November. Dessert.

——— CORNELIS (BIVORT) (*new*), 2nd size, 1st quality. Flesh fine and perfumed. August and September. Dessert.

PRINCESSE ROYALE (GROOM'S), 2nd size, 1st quality, roundish, melting. Raised in England by Mr. Groom the celebrated tulip grower, fruit greenish brown, tinged with red, flesh sweet and high flavoured. Standard. January and February. Dessert.

RED AUTUMN BUTTER (*new*). October and November. Dessert.

REINE DES BELGES (*new*).
SYN.—*Queen of the Belgians.*

——— D'HIVER. SYN.—*Queen of Winter.*

——— DES POIRES, 1st size, 2nd quality, obtuse, crisp. From France, very handsome and an abundant bearer, fruit smooth greenish yellow, flesh very dry and of an indifferent quality. Standard. October. Dessert.

RONDELET, 2nd size, 1st quality, oblate, melting. Excellent autumn pear, bears profusely and makes a fine standard. October. Dessert.

ROUSSELET DE RHEIMS, 3rd size, 1st quality, pyriform, melting. Small but excellent French pear, the supposed parent of the American Seckel, fruit yellowish green, brownish red next the sun, flesh breaking with a rich aromatic flavour. Standard or Wall. September. Dessert.

ROUSE LING, 1st size, 2nd quality, oblong, melting. Very large, and some seasons of first quality, fruit pale green, flesh white, soft, and sugary. Standard. January and February, Dessert.

ROYALE DU LUXEMBOURG (*new*).

SAINT AUBIN SUR RIGA (*new*), 1st size, 1st quality, oblong, melting. New variety from Jersey, said to be large and very handsome, flesh very tender, with a rich and excellent flavour. Standard or Wall. January and February. Dessert.

——— DENIS, 1st size, 1st quality. Excellent and early melting pear, succeeds well on the quince. Standard. August and September. Dessert.

——— GERMAIN, 1st size, 1st quality, pyriform, juicy. An esteemed French variety, tree rather a slow grower, with a dense head of foliage, the leaves are narrow, folded, and curved, wood slender and light olive colour, fruit yellowish green, speckled with brown next the sun, flesh white, a little gritty, but full of a rich juice. Wall or Standard. November to January. Dessert.
SYN.—*St. Germain Gris, Saint Germain Jaune.*

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Pears

SAINT GERMAIN (UVEDALE'S), 1st size, 1st quality, oblong pyriform, crisp. Supposed to be of English origin, has been upwards of a century in cultivation, and frequently grown to weigh upwards of three pounds, fruit yellowish green at maturity, with a brown cheek, flesh white, hard, and astringent, but bakes and stews well, tree a strong grower, but requires a wall, in most places, to ripen its fruit. January to April. Culinary.

SYN.—*Uvedale's Warden, Germain Baker, Lent Saint Germain, Pickering Pear, Chalmers' Large, De Tonneau, Belle de Jersey* of the French.

——— GERMAIN D'ETE, 2nd size, 2nd quality, obovate, juicy. Pleasant summer pear, bearing enormous crops, and grows freely, fruit pale green, flesh juicy, tender, and sweet, slightly acid. Standard. August. Dessert.

SYN.—*Summer Saint Germain, Saint Germain de Martin.*

——— LEZIN, 1st size, 1st quality, pyriform, crisp. Like Belle de Jersey and Uvedale's Saint Germain, but rather hardier as a standard, fruit very large and handsome. September and October. Culinary.

——— MARC, or SAINT ANDRE (*new*).

——— MICHAEL, ARCHANGEL (*new*), 2nd size, 1st quality, pyriform, melting. New and excellent pear, resembles the White Doyenne, but more pyriform in shape, a valuable fruit. Standard or Wall. October and November. Dessert.

——— NICHOLAS, 1st size, 1st quality. Habit of tree vigorous and very productive. December. Dessert.

SECKLE, 3rd size, 1st quality, obovate, melting. Small but highly perfumed pear, from America, bears profusely, and has a peculiar rich aroma, with a honied sweetness, succeeds on the quince double worked, and makes a fine standard. January and February. Dessert.

SYN.—*New York Red Cheek, Red Cheeked Seckle.*

SEEDLING (TAYLOR'S).

SHOBDEN COURT (KNIGHT'S), 2nd size, 1st quality, obovate, melting. Very hardy, rich, sugary, and melting, succeeds on the quince double worked, makes a fine standard. January and February. Dessert.

SEIGNEUR, 2nd size, 1st quality, melting. New, hardy, and good, succeeds well on the quince, and forms a handsome pyramid. Standard or Wall. November. Dessert.

——— D'ESPEREN (*new*), 1st size, 1st quality, obovate, juicy. New and excellent half melting late pear, succeeds admirably on the quince, and bears profusely. Standard. January. Dessert.

SOLDAT LABOUREUR (*new*), 1st size, 1st quality, obovate, melting. New and excellent melting pear, succeeds admirably on the quince, and makes a prolific pyramid. Standard or Wall. February and March. Dessert.

SUMMER ROSE, 2nd size, 1st quality, oblate, juicy. Handsome and very popular summer pear, fruit faint yellow, speckled with russet, and reddish russet next the sun, marked with brown dots, flattened at both ends, greatly resembling an apple, flesh white, juicy, rich, and sugary. Standard. August and September. Dessert.

SYN.—*Epine Rose, Rosenbirne, De Rose, Caillot Rosat D'Ete.*

SUCREE NOIR, or BLACK SUGAR (*new*).

——— VERTE, 2nd size, 1st quality, obovate, juicy. This is the true Green Sugar pear (that of some collections being the Green Chisel), tree very vigorous, and robust, makes a fine standard, and bears abundantly. October. Dessert.

SYN.—*Green Sugar.*

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Pears.

SUFFOLK THORN, 2nd size, 1st quality, roundish, melting. This is a seedling from Gansel's Bergamotte, and partakes of its flavour, is very hardy and excellent, succeeds on the quince double worked. Standard. October. Dessert.

SUPREME COLOMA (*new*). December and January. Dessert.

SWAN'S EGG, 2nd size, 1st quality, obovate, juicy. Good bearer and very hardy, habit of tree very erect and spire-like in its growth, producing enormous crops. Standard. October. Dessert.

THOMSON'S, 2nd size, 1st quality, obovate, melting. Very delicious and high flavoured pear, was named after Mr. Robert Thomson, Manager of the Fruit Department in the Horticultural Society's Garden, London, tree hardy and very productive. Standard or Wall. November. Dessert.

TRIOMPHE DE JODOIGNE, 1st size, 1st quality, melting. New, excellent, and very large melting pear, succeeds well on the quince, and forms a magnificent pyramid, owing to its fine large deep green foliage. Standard or Wall. December. Dessert.

URBANISTE, or PARADISE D'AUTOMNE, 1st size, 1st quality, obovate, melting. Excellent hardy variety, fruit pale yellow, with grey dots, flesh white, buttery, and melting, with a delicious and delicately perfumed juice. Standard.

VAN MONS.

VAN MONS (LEON LE CLERC), 1st size, 1st quality, oblong obovate, melting. Raised from seed by M. Leon le Clerc, who named it after his friend Van Mons, fruit very large, skin yellowish brown, with russet near the stalk, flesh yellowish white, flavour rich and sugary, succeeds well on the quince, and bears well as a pyramid in good situations. Wall or Standard. October and November. Dessert.

VALLEE FRANCHE, 2nd size, 1st quality, obovate, juicy. Of fair quality as a summer pear, and bears profusely, fruit yellowish green, flesh white, flavour sweet. Standard. August and September. Dessert.

SYN.—*Des Vallee.*

VERTE LONGUE, 2nd size, 2nd quality, pyriform, juicy. This is a very agreeable and refreshing fruit, almost first quality, is remarkably juicy, and bears most abundant crops. Standard. October. Dessert.

SYN.—*Long Green.*

VICAR OF WINKFIELD, 1st size, 2nd quality, long pyriform, juicy. Very large and handsome, is exceedingly well adapted for baking, and being very hardy and productive, makes it very valuable as an orchard tree, fruit pale yellow, sometimes six inches long, flesh greenish white, generally juicy, but sometimes melting, with a very good flavour. Standard. December and January. Dessert and Culinary.

SYN.—*Dumas.*

VICOMPTE DE SPOELBERG (*new*), 2nd size, 1st quality, melting. New, hardy, and excellent, bears enormous crops, makes a handsome pyramid. Standard or Wall. November and December. Dessert.

VINEUSE D'ESPEREN (ESPEREN) (*new*). Exquisite, flesh fine, juicy, very rich, and pretty. September.

VIRGOULEUSE, 1st size, 1st quality, oval obovate, melting. Excellent French variety, takes its name from Virgoul, a small village in France, the place of its origin, it is, however, a shy bearer, requires a wall and a good aspect to ripen its fruit. November and December. Culinary.

SYN.—*Poire Glace, Chambrette.*

VIRGOULEUSE DES IX. TOURS.

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Pears.

WINDSOR, 1st size, 2nd quality, pyriform, juicy, and tender. This variety is remarkable for its very erect and robust habit of growth, makes a fine standard on good and dry soils, but very apt to canker in wet and cold localities, fruit yellow, tinged with orange, flesh white, soft, but rather gritty, with a rich sugary astringent juice. Standard. August and September. Dessert.

SYN.—*Rouge, Summer Bell.*

YATT, 2nd size, 1st quality, pyriform, juicy, and tender. The trees of this variety grow large, with drooping branches, like the Jargonelle, but more slender, fruit of a brownish colour, thickly covered with russety grey specks, flesh breaking and tender, with a sugary, rich, and highly perfumed juice. Standard. September. Dessert.

SYN.—*Yutte.*

BEURRE BACHELIER (BACHELIER) (*new*), 1st size, 1st quality. Very large and handsome, flesh melting, juicy, rich, and delicious. November. Dessert.

CHERRIES.

		s.	d.		s.	d.
DWARF	each	1/	to	1	6
DWARF Trained	—	2/6	to	3	6
DWARF Standard on Cerasus Mahaleb	—	2/6			
STANDARD	—	1/			
RIDER	—	2/	to	2	6
RIDER Trained	—	4/	to	5	0

NEW SORTS AND EXTRA FINE TREES, CHARGED A LITTLE HIGHER.

Cherries.

ADAM'S CROWN, 2nd size, 1st quality, round, heart-shaped. Very hardy and excellent variety, skin pale red, flesh tender, excellent bearer, and highly deserves cultivation. In season about the beginning of July. Used for Dessert.

ADMIRABLE DE SOISONS (*new*). Middle of July. Dessert.

ARCH-DUKE (*new*), 1st size, 1st quality, roundish. A very old and excellent variety of May-Duke, but producing fruit of a larger size, and its habit, as a tree, more vigorous, skin at first red, then becomes black, flesh dark red, melting, juicy, slightly bitter until fully ripe, when it becomes of an excellent rich sub-acid flavour. Wall or Standard. Middle of July. Dessert.

BELLE DE CHOISY, 1st size, 1st quality, roundish. Very handsome, delicate, and most delicious, raised at Choisy, in the neighbourhood of Paris, in 1760, habit of tree is nearly that of the May-Duke, but the fruit is more round, skin very thin and translucent, showing a net-like texture of flesh beneath, amber coloured, mottled with yellowish red or rich cornellian next the sun, flesh melting, tender, rich, and sugary. Wall or Standard. Beginning of July. Dessert.

SYN.—*Ambree de Choisy, Cerise à Noyau Tendre.*

——— D'ORLEANS (*new*), 1st size, 1st quality, roundish. One of the earliest and very best of cherries. Middle of June. Dessert.

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Cherries.

BIGARREAU, 1st size, 1st quality, obtuse, heart-shaped. This is *the* Biggareau par excellence, and is unquestionably one of the largest and most beautiful of this class of cherries, skin pale whitish yellow on the shaded side, and bright red, finely marbled, on the side next the sun, flesh pale yellow, firm, and juicy, with a rich and sweet flavour, tree a good bearer. Standard or Wall. Middle of July. Dessert.

SYN.—*Graffion, Bigarreau Royal, Italian Heart, Bigarreau Gros, Turkey Bigarreau, Bigarreau Tardif.*

——— NAPOLEON, 1st size, 1st quality, obtuse heart. This is one of the finest of firm-fleshed cherries, large, well-flavoured, and productive, skin pale yellow, becoming amber in the shade, spotted with very deep red, and finely marbled with dark crimson next the sun, flesh very firm and juicy, tree an abundant bearer. Wall or Standard. End of July. Dessert.

SYN.—*Lauermann's Kirsche, Bigarreau Lauermann, Lauermann's Grosse Kirsche.*

——— WHITE, 1st size, 1st quality, heart-shaped. Very large but not very hardy, bears thinly while in its young state, but becomes more productive, and gives excellent crops when it has arrived at from twelve to fifteen years' growth, skin yellowish white at first, but becomes quite overspread with a marbling of red, flesh firm, and when fully ripe, half tender and more luscious than the Bigarreau. Wall or Standard. End of June. Dessert.

SYN.—*Bigarreau Blanc, Large White Bigarreau, Turkey Bigarreau, White Ox Heart, Tradescant, Harrison Heart.*

——— TARDIF D'ARGENTAL (*new*).

——— GROS COEURET (*new*), 1st size, 1st quality, heart-shaped. This is the true heart-shaped Bigarreau of French origin, and highly deserves cultivation, skin pale yellowish red, with deep red streaks, but becomes, when fully ripe, a dark shining red, almost black, flesh purplish, firm, a little bitter at first, but of an excellent rich flavour when fully ripe. Standard or Wall. Middle of July.

SYN.—*Bigarreau, Gros Monstreaux, Gros Coeuret, Large Heart-shaped Bigarreau.*

——— HOLLAND (*new*), 1st size, 1st quality, heart-shaped. One of the largest and finest, habit of tree hardy and of rapid growth, bearing enormous crops even while in a young state, ripening earlier than the Bigarreau, becoming literally loaded with bunches of fruit, skin white or pale yellow in the shade, richly mottled and spotted with bright carmine, flesh firm, very juicy, sweet, and rich. Standard or Wall. Beginning of July. Dessert.

SYN.—*Spotted Bigarreau Bigarreau D'Hollande, Armstrong's Bigarreau.*

BLACK EAGLE, 2nd size, 1st quality, obtuse, heart-shaped. Very excellent English variety, raised by the daughter of Mr. Knight, at Downton Castle, in 1806, from the seed of the Bigarreau fertilized by the May-Duke, skin deep purple, or nearly black, flesh deep purple, tender, with a rich and high flavoured juice, a good bearer. Wall or Standard. Beginning of July. Dessert.

——— HEART, 2nd size, 1st quality, heart-shaped. Very old and useful variety, exceedingly fruitful, well-flavoured, and hardy, the tree grows to a very large size, skin glossy dark purple, becomes deep black when fully ripe, flesh at maturity tender and juicy, with a rich sweet flavour. Standard or Wall. Beginning of July. Dessert.

SYN.—*Early Black, Ansell's Fine Black, Spanish Black Heart, Black Caroon Gean.*

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BLACK HEART (TRADESCANT'S), 1st size, 1st quality, heart-shaped. Very distinct, from the exceedingly solid liver-like consistence of its flesh, and the irregular surface of its skin, ripening late, flavour rich, skin deep black and glossy when fully ripe, flesh very solid and firm, dark purple, juicy, with an excellent flavour. Standard or Wall. Middle of July. Dessert.

SYN.—*Elkhorn of Maryland, Bigarreau Gros Noir, Guigne Noire Tardive, Tradescant's.*

BOWYER'S EARLY HEART, 2nd size, 1st quality, obtuse, heart-shaped. An English variety, and one of the earliest of light coloured cherries, tree hardy, and a good bearer, skin amber coloured, mottled with red, flesh white, very tender, and juicy, with a pleasant sweet flavour. Standard or Wall. Middle of July. Dessert.

BRITISH CROWN.

BUTTNER'S BLACK HEART (*new*). June. Dessert.

———— YELLOW (*new*), 2nd size, 1st quality, roundish. This variety was raised by Buttner of Halle, in Germany, and is one of the few cherries that are entirely yellow, skin pale yellow, flesh firm, yellowish, and very sweet, a good bearer, and not so liable to the attacks of birds as the red and black cherries. Standard or Wall.

SYN.—*Büttner's Wachs-Knorpel Kirsche, Büttner's Gelbe Knorpel Kirsche.*

———— OCTOBER MORELLO, 2nd size, round. New Dutch acid cherry, probably the latest variety known in Europe, and chiefly valued for ripening after all others have disappeared, skin dark red, flesh juicy and tender, but quite acid, and only fit for culinary purposes. Standard or Wall. September and October. Culinary.

CARNATION (COE'S LATE), 1st size, 1st quality, round. Excellent, raised at Bury in Suffolk, very useful for preserving, being a little acid, skin bright red, slightly marbled, flesh tender, rather firm, but juicy, and when fully ripe, of an excellent sub-acid flavour. Standard or Wall. End of July or beginning of August. Dessert or Preserves.

CLUSTER, 3rd size, round. Very curious fruit, grown in clusters around a common stalk, each flower varies from its normal state by having several pistils or styles, several of which (frequently five or six), become perfect fruit, forming a bouquet or cluster, skin lively red, flesh juicy, but acid, only fit for preserving. Standard. End of June. Preserves.

SYN.—*Cerise à Bouquet, Tres Fertile.*

CORONNE, 2nd size, 2nd quality, roundish, heart-shaped. Very hardy, bears abundantly, and of a vigorous growth, skin of a dingy black colour when fully ripe, flesh tender, abounding with a deep purple juice, flavour good. Standard. End of July. Dessert or Preserves.

SYN.—*Herefordshire Black, Large Black Gean.*

DOUBLE, MAY (*new*). Middle of June. May. Dessert.

DOWNTON, 1st size, 1st quality, round heart-shaped. Very large and excellent, raised by T. A. Knight, Esq., Downton Castle, from a seed of the Elton, skin pale cream colour, semi-transparent, delicately stained on one side with red, and marbled with red dots, flesh yellowish and tender, adhering slightly to the stone, flavour very rich. Wall or Standard. Beginning of July. Dessert.

DUKE, LATE, 1st size, 1st quality, obtuse, heart-shaped. Very large and excellent, Duke Cherry, ripening a month later than the May-Duke, a very valuable sort for dessert and cooking, tree vigorous, and the leaves larger than those of the May-Duke, skin, when fully ripe, of a rich dark red colour, flesh yellowish, tender, and juicy, with a good sub-acid flavour, ripens gradually. Standard or Wall. End of July and beginning of August. Dessert or Preserves.

SYN.—*Anglaise Tardive.*

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Cherries.

DONNA MARIA (*new*), 1st size, 1st quality. New variety and said to be of the finest quality.

DOWNER'S LATE (*new*), 2nd size, 1st quality. An American variety, raised by Samuel Downer, Esq., Dorchester, near Boston, a very regular and good bearer, ripens late and hangs long upon the tree, and, being a delicious melting fruit, deserves general cultivation, skin very smooth, of a soft but lively red, mottled with amber in the shade, flesh tender, with a sweet and luscious flavour. Wall or Standard. Middle of July. Dessert.

SYN.—*Downer's Late Red, Downer's.*

EARLY PURPLE GRIOTTE, 2nd size, 1st quality, roundish. An exceedingly early variety, ripening in May, some seasons hardy and very handsome, skin smooth, dark red, becoming purple, flesh tender and juicy, with a rich and sweet flavour, the leaves of this sort have longer footstalks than those of other sorts. Standard or Wall. Beginning of June. Dessert.

SYN.—*Early Purple Guigne.*

ELTON, 1st size, 1st quality, heart-shaped. An excellent cherry, was raised by Knight in 1806, from a seed of the Bigarreau, fertilized with the White Heart, and is, without doubt, one of the finest of large cherries, skin thin, pale yellow in the shade, but delicately mottled, and streaked with bright red next the sun, flesh tender and juicy, with a very rich and luscious flavour. Wall or Standard. Dessert.

FLORENCE, 1st size, 1st quality, heart-shaped. Most excellent cherry, originally brought from Florence, resembles the Bigarreau, but ripens later, and has the additional good quality of hanging a long time on the tree, skin amber yellow, delicately marbled with red, and when fully exposed, the whole fruit becomes of a fine lively red, flesh yellowish, very firm, quite juicy, and sweet. Wall or Standard. End of July. Dessert.

SYN.—*Kenvett's Late Bigarreau.*

GEAN, CASTLE MENZIES, 2nd size, 2nd quality, heart-shaped. This is another hardy variety, makes a noble tree, and is very ornamental, planted singly in parks or pleasure grounds, bears a handsome black gean, flesh juicy and tender. Standard. Middle of July. Dessert.

——— HUNGARIAN, 2nd size, 2nd quality, obtuse, heart-shaped. Very hardy, makes a fine standard, and is very productive, hanging long upon the tree, skin amber-coloured, flesh half-tender, juicy, and tolerably rich. July. Dessert.

GRIOTTE DE CHAUX (*new*), 1st size, 1st quality. Large and very excellent, skin at maturity, of a fine black colour, flesh tender, juicy, and very sweet. Standard or Wall. End of July. Dessert.

SYN.—*Griotte D'Allemagne.*

JAUNE DE PUSSE (*new*), 1st size, 1st quality, heart-shaped. New and excellent variety, lately introduced from France, skin golden yellow, flesh yellowish and very sweet. Wall or Standard. Beginning of July. Dessert.

SYN.—*Prussian Yellow.*

JEFFREY'S DUKE, 2nd size, 1st quality, roundish. This is the Cerise Royale of the French gardens, has a considerable resemblance to the May-Duke, but its fruit is more round, and never attaining the dark hue of that favourite variety, skin of a fine lively red, flesh yellowish amber, juicy, and of a rich flavour; habit of tree very distinct, being one of the most rigid and compact in its growth, bearing its fruit in thick clusters, makes a fine pyramid. Dessert.

SYN.—*Royale, Cherry Duke, Jeffrey's Royal, Royal Ordinaire.*

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KENTISH, 2nd size, 1st quality, round. This is the true Kentish, or Early Richmond, and one of the most valuable of the acid cherries, when beginning to colour it may be used for tarts, will also hang on the tree, growing larger and gradually loosing its acidity, until the middle of July, when it becomes of a rich acid flavour, skin of a bright red or rather dark when fully ripe, flesh melting and juicy, and at maturity of a brisk and rather acid flavour. Standard or Wall. Middle of July. Culinary.

SYN.—*Early Richmond, Montmorency, Pie Cherry, Virginian May.*

KENTISH EARLY BLACK.

KNIGHT'S EARLY BLACK, 1st size, 1st quality, obtuse, heart-shaped. Most admirable cherry, resembles the Black Tartarian, but more obtuse in form, and ripens a week earlier, it is one of Knight's seedlings, raised from a seed of the Bigarreau, impregnated by the May-Duke, skin dark purple, becoming black, flesh purple, tender, juicy, and very high flavoured. Wall or Standard. Dessert.

LARGE BLACK BIGARREAU (*new*). July. Dessert.

———— MAY HEART (*new*). June. Dessert.

LEOPOLD'S CHERRY (*new*). Middle of July. Dessert.

MAY-DUKE, 2nd size, 1st quality. This fine early cherry is one of the most popular sorts in all countries, does almost equally well in all climates, warm or cold, before it is fully ripe it is admirably adapted for cooking, and when at maturity, it is perhaps the richest of all sub-acid cherries, skin, when fully ripe, of a rich dark red, flesh reddish, tender, and melting, very juicy, with a rich and excellent flavour. Wall or Standard. Middle or end of June. Dessert.

SYN.—*Morris's Duke, Large May-Duke, Thomson's Duke, Portugal-Duke.*

MANNING'S MOTTLED (*new*), 1st size, 1st quality, roundish, heart-shaped. A beautiful American cherry, raised by Mr. Manning of Salem, Mass., from a seed of the Bigarreau, but being a very tender fleshed heart cherry, should not be called a Bigarreau, skin amber colour, flesh, when fully ripe, yellow and tender, with a sweet and delicious juice, it is also a very abundant bearer. Wall or Standard. Begiuning of July. Dessert.

SYN.—*Mottled Bigarreau.*

———— EARLY WHITE (*new*), 1st size, 1st quality. An American variety, said to be very fine and remarkably early.

MORELLO, 1st size, 1st quality, obtuse, heart-shaped. This variety is the large or true Morello, and when grown in a shaded situation, or trained on north walls to retard is season, will hang on the tree till October, when it becomes a rich and agreeable table fruit, skin dark red, becoming nearly black when fully ripe, flesh dark purplish red, tender, and juicy, and of a sub-acid flavour, when mature, it is highly esteemed for all kind of preserves, does as a standard, but deserves a wall. July and August. Dessert or Culinary.

SYN.—*Late Morello, Dutch Morello, Ronald's Large Morello, Black Morello.*

PRINCES' CHERRY (*new*). Beginning of July. Dessert and Preserves.

REINE HORTENSE (*new*), 1st size, 1st quality. New, large, and excellent variety, recently introduced from France.

———— SPA, NEW (*new*). SYN.—*Queen Spa.*

ROYAL DUKE, 1st size, 1st quality, roundish, oblate. Very excellent variety of Duke Cherry, the fruit is much larger than that of the May-Duke, and more flattened at the top and bottom, skin dark red, flesh reddish, tender, juicy, and rich, is a good bearer, and as a tree, greatly resembles the May-Duke. Wall or Standard. Beginning of July. Dessert.

SYN.—*Anglaise, Royale Hative.*

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Cherries.

RIVER'S EARLY AMBER, 1st size, 1st quality, heart-shaped. Large and very beautiful variety, raised by Mr. Rivers, Sawbridgeworth, Herts, skin amber coloured, tinged with red on the sunny side, flesh yellowish, juicy, melting, and rich, it is also hardy and very prolific. Standard or Wall. Middle of June. Dessert.

SYN.—*Early Amber Heart (Rivers')*.

SHADED MORELLO (*new*). September. Preserve or Dessert.

SPANISH AMBER (*new*). End of June. Dessert.

TARDIVE DE MONS, 2nd size, 1st quality. New variety from France, said to be very sweet; hangs long on the tree.

TARTARIAN BLACK, 1st size, 1st quality, obtuse, heart-shaped. This excellent fruit is always very popular where it is known, and in size, flavour, and productiveness, it has no superior among the black cherries, remarkable for its vigorous growth, large leaves, and erect habit, skin glossy purplish black, flesh purplish, half tender, and juicy, flavour rich and delicious. Wall or Standard. Middle of June. Dessert.

SYN —*Black Circassian, Fraser's Black Heart, Tartarian, Ronald's Heart.*

WHITE HEART, 2nd size, 1st quality, heart-shaped. This is an old variety, fruit growing in pairs or threes, skin dull whitish yellow, tinged, pleasant flavour. Standard or Wall. Beginning of July. Dessert.

SYN.—*Dredge's Early White Heart, Amber Heart, White Transparent.*

WATERLOO, 1st size, 2nd quality, obtuse, heart-shaped. This variety is almost first quality, it was raised by Knight from a seed of the Bigarreau, fertilized by the May-Duke, it retains in part the habit of both parents, the flowers and tender flesh resemble those of the May-Duke, and the long wood and leaves, those of the Bigarreau, skin dark purple, becoming black at maturity, flesh purplish red, juicy, and tender, with a rich and sweet flavour. Wall or Standard. Beginning of July. Dessert.

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PLUMS.

		s.	d.	
DWARF, 6 to 9 inch stem	each	1/		
DWARF Trained	—	3/6 to 5	6	
STANDARD, 3 to 5 feet stem	—	1/6 to 2	0	
RIDER, 4½ to 6 feet stem	—	2/ to 3	0	
RIDER Trained, 4½ to 6 feet stem	—	5/ to 7	6	

NEW SORTS AND EXTRA FINE TREES CHARGED A LITTLE HIGHER.

Plums.

ASHBRIDGE BLACK, 2nd size, 2nd quality, round, purple. Very hardy, and good cooking plum, and a great bearer. In season, end of August. Used for Culinary purposes.

BELGIAN PURPLE (*new*), 1st size, 1st quality, purple. Large, rich, and very excellent. September. Dessert.

BLEEKER'S GAGE, 2nd size, 1st quality, roundish oval, yellow. Raised in America, where it is very popular, skin yellow, with white specks, flesh yellow, rich, sweet, and luscious, bears abundantly. Standard or Wall. September. Dessert.

SYN.—*German Gage, Bleeker's Yellow Gage.*

CALEDONIAN, 1st size, 2nd quality, oblong. Large and handsome, has been confounded with the Nectarine, from which it is easily distinguished by its grey, downy, and very robust shoots, skin reddish purple, flesh yellow, adheres to the stone, juice, with a brisk and rich flavour. Standard or Wall. August. Culinary or Dessert.

SYN.—*Wilmot's Late Orleans.*

CLOTH OF GOLD, (ESPEREN) (*new*), 2nd size, 1st quality, roundish. Very excellent new plum, a good bearer, and the fruit very sweet. Wall or Standard. Beginning of September. Dessert.

SYN.—*Drap D'Or D'Esperen.*

COE'S FINE LATE RED, 2nd size, 1st quality, roundish, purple. Valuable, on account of its lateness, may be preserved on walls till Christmas, flesh yellowish, rather firm, crisp, and juicy, flavour rich and vinous. Wall or Standard. October and November. Dessert.

SYN.—*Saint Martin Rouge.*

—— GOLDEN DROP, 1st size, 1st quality, oval, yellow. Raised in Suffolk, very large and good, flesh yellow, rather firm, and adhering to the stone, flavour very rich and sweet. Wall or Standard. End of September. Dessert or Preserves.

SYN.—*Bury Seedling, Fair's Golden Drop, Coe's Imperial.*

COOPER'S LARGE, 1st size, 1st quality, oval. An American plum, was first introduced to England by Mr. Kirk of Brompton, skin pale yellow, on the shaded side, and deep purple in the sun, with brown specks, flesh yellow, and separates from the stone, juice peculiarly rich and abundant. Wall or Standard. October. Dessert.

SYN.—*Cooper's Large Red, Cooper's Large American, La Delicieuse.*

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Plums.

CORSE'S NOTA BENE (*new*), 1st size, 1st quality. From America, raised by Henry Corse, Esq., near Montreal, considered the best of the several varieties raised by him, it is of a pale brown colour, flesh greenish, rather firm but juicy, and very rich and sweet, separates from the stone, hardy, and prolific. Standard or Wall. September. Dessert.

COLUMBIA (*new*), 1st size, 1st quality, roundish. From America, raised by Mr. Lawrence of Hudson, from a seed of the Green Gage, it is a superb and rich flavoured fruit, often six and seven inches in circumference, skin a brownish purple, flesh orange, very rich, and sugary. Wall or Standard. End of August and September. Dessert.

D'AGEN, 2nd size, 1st quality, obovate, purple. A French prune of good quality, tree vigorous, with narrow shining leaves, the fruit separates from the stone; well adapted for preserving, the flesh greenish yellow, very sweet, tree bears abundantly. Standard or Wall. September. Dessert or Preserves.

SYN.—*Prune D'Ante, Saint Maurin, Robe de Sergent, Prune Datte.*

DRAP D'OR, 2nd size, 1st quality, round. In shape and size greatly resembles the Green Gage, but of a fine golden yellow, and ripens a week or ten days earlier, flesh yellow, sugary, and rich, separates freely from the stone. Wall or Standard. Middle of August. Dessert.

SYN.—*Mirabelle, Double Mirabelle, Mirabelle Drap D'Or.*

DAMSON, 3rd size, 2nd quality, oval. Well known variety, enormously productive, skin purple, flesh melting and juicy, rather tart. Standard. September. Culinary or Preserves.

SYN.—*Common Damson, Round Damson.*

———— SHROPSHIRE, 3rd size, 1st quality, obovate. This is the true Prune Damson, valuable for preserving, skin dark blue, flesh green, adhering to the stone, juice tart but not rich. Standard. Middle of September. Culinary or Preserves.

SYN.—*Prune Damson, Long Damson.*

———— WHITE, 3rd size, oval. Hardy and prolific, skin pale yellow, spotted with light brown, flesh yellow, adhering to the stone, juice plentiful and sugary. Standard. End of September. Culinary.

SYN.—*Small Round Damson, Shailer's White Damson.*

DAMAS DE MONTGERON (LIEGEL) (*new*).

——— BLANC, 3rd size, 1st quality, roundish. Middle of September. Culinary or Dessert.

SYN.—*Damas Blanc, Hatif Gros, Tres Hatif.*

DE MONTFORT, 1st size, 1st quality. A new variety, said to be large and excellent. Standard or Wall. August. Dessert.

DIAMOND, 1st size, 2nd quality, oval. Very large and handsome, but only valuable for culinary purposes, skin of a dark purple, flesh deep yellow, rather coarse and dry, with but little flavour. Standard. Beginning of September. Culinary.

DIAPREE ROUGE, 1st size, 1st quality, obovate. From France, very large and handsome, skin of a reddish purple, flesh pale green, juicy, very melting, and rich, separates freely from the stone, which is very small. Beginning of September. Culinary or Dessert.

SYN.—*Roche Corbon, Mimm's Imperial Diadem.*

DOUBLE BEARING, 3rd size, 2nd quality, oblong. Has the property of ripening in succession, giving the first crop in August, the second in September. Standard or Wall. Dessert.

SYN.—*Bifere, La Venitienne.*

DUNMORE, 2nd size, 1st quality, oval. Very excellent variety, hardy, handsome, and bears abundantly. Standard or Wall. September. Dessert.

EARLY FAVOURITE (RIVERS' No. 1), 2nd size, 1st quality. Described by Mr. Rivers as the best early plum known. Standard or Wall. Middle of July. Dessert.

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EARLY PROLIFIC (RIVERS' No. 2), 2nd size, 1st quality. Early, hardy, and a most abundant bearer. Standard or Wall. End of July. Culinary.

FELLENBERG, 1st size, 1st quality. One of the best of late plums, very large and de licious. Wall or Standard. October. Dessert.

FONTHILL, 1st size, 1st quality, oval or roundish. An excellent plum either for table use or preserves, fine deep red next the sun, pale red in the shade, flesh very rich and juicy, separates freely from the stone. Wall or Standard. Culinary and Dessert.

FOTHERINGHAM, 2nd size, 1st quality, obovate. A very hardy and excellent plum, bright red on the shaded side, and deep red or purple where exposed to the sun, flesh pale greenish yellow, separates from the stone, juice sweet. Standard or Wall. Middle of August. Dessert.

SYN.—*Sheen, Grove House, Purple.*

GARLICKS, EARLY, 3rd size, 1st quality, obovate. An early and good plum. Standard or Wall. Beginning of August. Dessert.

GISBORNE'S 2nd size, 2nd quality, oblong. Very hardy and prolific, yellow all over. Standard. Culinary. August.

SYN.—*Paterson's, Gisborne's Early Prolific.*

GOLDEN GAGE (LAWSON'S), 1st size, 1st quality, roundish oval. A new and very excellent plum, raised by Mr. Gorrie, Annat Cottage, Perthshire, from a seed of the Green Gage, fertilized with Coe's Golden Drop, which, as a tree, it generally resembles, skin golden yellow, beautifully marked with purple spots, flesh yellowish, melting, and exceedingly rich, parts freely from the stone. Original tree hardy, and bearing as a standard. End of September. Dessert.

GOLIATH, 1st size, 2nd quality, oblong. A large and handsome plum, highly deserves cultivation, skin a fine deep reddish purple, flesh yellow, rather adhesive, but juicy and well flavoured. Standard or Wall. End of August. Culinary and Dessert.

SYN.—*Saint Cloud, Steers' Emperor.*

GREEN GAGE, 2nd size, 1st quality. Middle of August. This variety is admitted to be the finest flavoured of any as yet in cultivation, and is everywhere highly esteemed, yellowish green at maturity, often dotted with red, flesh pale green and exceedingly melting, with a rich juice. Middle of August. Dessert.

SYN.—*Reine Claude, Grosse Reine Claude, Bradford Gage, Willmot's New Green Gage.*

GUTHRIE'S RUSSET. This and the three following varieties were raised from seed by C. Guthrie, Esq. of Tay Bank, Dundee. They are all very hardy, and most excellent bearers. Standard or Wall. Culinary.

———— APRICOT, 1st size, 1st quality. A hardy and good bearer, has the flavour of the apricot. Standard or Wall. End of September. Dessert.

———— TAY BANK, 1st size, 1st quality. An excellent plum, much larger and later than the Green Gage, greenish. Standard or Wall. Dessert.

———— TOPAZ, 1st size, 1st quality, yellowish. End of September. Dessert.

HULLING'S SUPERB, 1st size, 1st quality, roundish. An American plum of the largest size, raised by Mr. Keyser of Pennsylvania, and first brought into notice by Dr. William Hullings of the same State, skin dull, greenish yellow, firm, with a rich brisk flavour, the tree is very productive. Standard or Wall. Beginning of September. Dessert.

SYN.—*Keyser's Plum.*

IMPERATRICE BLUE, 2nd size, 1st quality, obovate. This is one of the very finest of late plums; if allowed to hang till it shrivels will keep a considerable time, skin deep purple, flesh greenish yellow, rather firm and dry. Standard or Wall. October. Culinary and Dessert.

SYN.—*Imperatrice, Veritable Imperatrice, Imperatrice Violette.*

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Plums.

IMPERATRICE DOWNTON, 2nd size, 1st quality, oval. A hybrid raised by Mr. Knight from a seed of the White Magnum, fertilized by the Blue Imperatrice, pale yellow, flesh yellow, melting, and sweet. Wall or Standard. October. Culinary and Dessert.

——————— ICKWORTH, 1st size, 1st quality, obovate. One of the very best of late dessert plums raised by Mr. Knight, skin purple, flesh greenish yellow, sweet, juicy, and rich, ripens early in October, and may be kept till Christmas, gradually becoming dryer and more sugary, and by being wrapped in paper in a dry place, will keep for many months. Wall or Standard. October. Culinary and Dessert.

SYN.—*Knight's No. 6, Ickworth Imperatrice.*

JAUNE HATIVE, 2nd size, 2nd quality, oval. Valuable on account of its earliness, skin yellowish, flesh yellow, rather mealy, rich, sugary, and very pleasant, but its earliness is its chief recommendation. Standard or Walls. End of July. Dessert.

SYN.—*Amber Primordian, Catalorian St. Barnabe, White Primordian, D'Avoine, Jaune de Catalogue.*

JEFFERSON, 1st size, 1st quality, oval. An American plum, it is nearly, if not quite equal, in flavour to the Green Gage, but much larger, skin golden yellow, flesh deep orange, like that of an apricot, very rich, juicy, and high-flavoured. Standard or Wall. End of August. Dessert.

IMPERIAL PAGE, 1st size, 1st quality, oval. Raised at Prince's Nursery, Hushing, New York, from a seed of the Green Gage, skin greenish, pale yellow, flesh greenish yellow, firm, and very rich, separates freely from the stone. Standard or Wall. Beginning of September. Dessert.

KIRKE'S, 1st size, 1st quality, round. Hard, excellent, and productive, skin dark purple, flesh greenish yellow, firm, and very rich. Wall or Standard. Middle of September. Dessert.

SYN.—*Kirke's Seedling.*

LARGE GREEN DRYING, 1st size, 1st quality, round. Tree very vigorous, fruit large and handsome, skin greenish yellow, flesh yellow, rich, and juicy. Wall or Standard. End of September. Culinary and Dessert.

SYN.—*Knight's Large Drying.*

LAWRENCE'S GAGE, 1st size, 1st quality, roundish. Large, heavy, and excellent, raised from a seed of the Green Gage, by L. U. Lawrence, of Hudson, New York, the fruit is very like that of the Green Gage, but a great deal larger, and the tree very productive, skin dull greenish yellow, flesh greenish, juicy, and melting, flavour rich and very sweet. Wall or Standard. Middle of August. Dessert.

SYN.—*Lawrence's Favourite.*

MAGNUM BONUM, RED, 1st size, 2nd quality, oval. Large and handsome, best adapted for culinary and preserving purposes, being generally rather harsh for dessert, skin deep pale red, flesh greenish, rather firm, with a sub-acid flavour. Standard or Wall. Beginning of September. Culinary and Preserves.

SYN.—*Red Imperial, Purple Egg, Purple Magnum Bonum, Florence, Imperial Violette.*

——————— WHITE, 1st size, 1st quality, oval. Very popular fruit on account of its large and handsome appearance, skin and flesh yellow, adhering to the stone, rather acid until fully ripe, when it is very sweet. Standard or Wall. September. Culinary and Preserves.

SYN.—*Egg Plum, White Imperial, Dame Aubert, Grosse Luisante.*

MONSIEUR GROSSE SURPASSE, 1st size, 1st quality. Excellent and handsome, and of the largest size. Standard or Wall. August. Dessert.

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MAGNUM BONUM, YELLOW. An American plum of vigorous growth, and said to be very hardy, fruit similar to the White Magnum. Standard or Wall. September. Culinary and Preserves.

MOROCCO, 2nd size, 1st quality, roundish. One of the best of early purple plums, skin dark purple, flesh greenish yellow, juicy, with a smart rich flavour, very sweet at maturity. Standard or Wall. Beginning of August Dessert.

SYN.—*Early Morocco, Black Morocco.*

NECTARINE (TRUE), 1st size, 1st quality, roundish. Very large plum, and generally called the Peach Plum by the French, on account of its size, it is sometimes erroneously identified with the Goliath, skin purple, flesh greenish yellow, a good and regular bearer. Standard or Wall. Middle of August. Dessert and Preserves.

SYN.—*Peach Plum, Louis Philippe, Howell's Large, Jenkins' Imperial.*

NELSON'S VICTORY, 2nd size, 2nd quality, round. Hardy and good bearer, but used exclusively for culinary purposes. Standard. Middle of September.

———— WAVES.

ORANGE, 1st size, 1st quality, oval. An American plum, exceedingly large, and has a very showy appearance, it is also an abundant bearer, skin bronze yellow, flesh deep yellow, a little coarse grained, adheres to the stone. September. Culinary and Dessert.

ORLEANS, 2nd size, 1st quality, round. Very hardy and productive plum, skin dark red, flesh yellowish and very sweet. End of August. Culinary. Standard.

SYN.—*Old Orleans, Monseiur Ordinaire, Red Damask.*

———— EARLY, 2nd size, 1st quality, roundish. Very like the preceding variety, only that it ripens ten days earlier, skin reddish purple, flesh yellowish green, with a brisk flavour, tree a very good bearer. Standard. Middle of August. Culinary and Dessert.

SYN.—*Monsieur Hatif, New Orleans, Wilmott's Early Orleans.*

———— SMITH'S, 1st size, 1st quality, oval. Native of America, where it is very popular, and is the largest and finest of this class of plums, it is a very vigorous grower, and bears abundantly, skin reddish purple, flesh deep yellow, with a very rich and vinous flavour, adheres to the stone. Standard or Wall. End of August. Dessert.

SYN.—*Smith's Orleans.*

PERDRIGON, BLUE, 2nd size, 1st quality, oval. Very old variety, and has been long in cultivation, largely used along with the White Perdrigon in making the Brignale Prunes, skin reddish purple, flesh greenish yellow, rather firm, sugary, and rich, adheres to the stone. Standard or Wall. End of August. Dessert and Preserves.

SYN.—*Brignale Violette, Perdrigon Violette.*

———— VIOLET HATIF, 2nd size, 1st quality, roundish, oval. Greatly resembles the Blue Perdrigon, but ripens about ten days earlier. Middle of August. Dessert.

SYN.—*Perdrigon Hatif, Hatif Moyen de Bourgoyne.*

———— WHITE, 2nd size, 1st quality, oval. This variety is highly cultivated in Provence for drying to form the Brignale Prunes, skin pale greenish yellow, very sweet, adheres to stone. Standard or Wall. About the end of August. Preserves.

SYN.— *Perdrigon Blanc, Brignale, Maitre Claude.*

POND'S SEEDLING, 1st size, 2nd quality, roundish. Large and very productive variety, brought into notice by Samuel Pond, a Nurseryman near Boston, skin purple, flesh yellowish, rather dry but sweet, separates freely from the stone. Standard or Wall. September. Culinary.

SYN.—*Pond's Purple.*

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Pluma.

PURPLE WASHINGTON, 1st size, 1st quality, oval. Raised by Henry Brevoort, Esq. of New York, a very handsome and productive variety, skin reddish purple, flesh yellowish, soft, and juicy, adheres closely to the stone. Standard or Wall. End of September. Culinary and Dessert.

SYN.—*New York Purple, Breevoot's Purple.*

——— FAVOURITE, 2nd size, 1st quality, roundish obovate. An American plum, and named by J. D. Doroning, Highland Gardens, Newburgh, New York, where the tree grew from which the stock has been derived, skin brownish purple, flesh pale greenish, very juicy and tender, parts freely from the stone. Standard or Wall. End of August. Dessert.

QUETCHE, 2nd size, 2nd quality, oval. Very valuable variety for drying and preserving, flesh firm, green, and very sweet, separates from the stone. Standard. September. Culinary and Preserves.

SYN.—*Damask, Damas Gros, German Prune, D'Allemagne.*

——— SAINT MARTIN'S, 2nd size, 1st quality, ovate. Hardy, valuable, rich, and productive German prune, skin yellowish white, flesh yellowish, separates freely from the stone. Standard. Dessert.

REINE CLAUDE VIOLETTE, 2nd size, 1st quality, roundish. Late, hardy, and excellent variety, skin violet or purple, flesh greenish yellow, rich, sugary, and high flavoured, separates from the stone. Beginning of September. Dessert.

SYN.—*Fielette Gage, Purple Gage.*

REIN CLAUDE DE BAVEY, 1st size, 1st quality, roundish, oval. New and very handsome variety of French origin, skin yellowish white, flesh greenish yellow, and very rich, separates from the stone. End of September. Dessert.

ROYAL HATIVE, 2nd size, 1st quality, round. Early and excellent variety, of French origin, resembles Reine Claude Violette, but ripens a month earlier, skin light purple, flesh amber yellow, with a rich high flavour, separates from the stone. Standard or Wall. Beginning of August. Dessert.

SYN.—*Miriam.*

SAINT CATHERINE, 2nd size, 1st quality, obovate. One of the oldest and most celebrated of French plums, makes the most delicate kind of prunes, skin very pale yellow, flesh yellow, juice rather firm, adheres closely to the stone. Standard or Wall. Middle of September. Dessert and Preserves.

SAINT ETIENNE.

SHARP'S EMPEROR, 1st size, 1st quality, oblong. A plum of the largest size, and in some seasons first quality, skin reddish purple, flesh amber colour, brisk and juicy, adheres partially to the stone. Middle of August. Dessert and Culinary.

SYN.—*Duane's Purple French* of the Americans.

SUPERB (DENNISTON'S), 1st size, 1st quality, roundish. An excellent seedling from Mr. Denniston's famous plum orchard near Albany, New York, of the Green Gage family, but a third larger and nearly as rich in flavour, skin pale yellowish green, flesh very thick aud moderately juicy. Standard or Wall. End of August. Dessert and Culinary.

SYN.—*Denniston's Superb.*

SUPREME DIADEM.

VICTORIA (DENYER'S), 1st size, 1st quality, oval. Large and handsome plum, a native of England, very hardy and bears abundantly, skin of a brightish red, flesh deep yellow, of a moderately rich flavour. Standard or Wall. Middle of September. Dessert and Culinary.

SYN.—*Royal Victoria.*

VIRGIN, 2nd size, 1st quality, roundish. Resembles Reine Claude Violette, skin purple, flesh yellow, of a rich flavour. Standard or Wall. Beginning of September. Dessert.

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WASHINGTON, 1st size, 1st quality, roundish, oval. An American plum, and stands higher in general estimation than any other variety; although not equal in flavour to the Green Gage and some others, yet its great size and beauty have brought it into notice everywhere; tree vigorous and hardy, skin dull yellow, with faint marblings of green, dotted with pale crimson, flesh yellow, very firm, sweet, and luscious, separates freely from the stone. Standard or Wall. End of August.

SYN.—*Franklin, New Washington, Balmar, Balmar's Washington.*

WINE, SOUR, 3rd size, 1st quality, roundish oblong. Small plum, but one of the very best for preserving, skin dark purple, flesh yellow, juicy, and agreeably acid, adheres to the stone. Standard or Wall. Middle of September. Culinary and Preserves.

SYN.—*Abricot Common, Germine, Gros Germine, Transparent.*

APRICOTS.

	s.	d.		
DWARF	1	6 to	2/6	each.
DWARF Trained	5	0 to	7/6	—
RIDER	2	6 to	3/6	—
RIDER Trained	7	6 to	10/6	—

SINGLE TREES SELECTED IN NURSERY CHARGED HIGHER.

ALGIERS.

BREDA, 3rd size, 1st quality, roundish, sometimes four-cornered. Small but excellent variety, said to be originally from Africa, is very hardy and a good bearer, and makes one of the richest preserves, skin becoming dark orange in the sun, flesh deep orange, rich, high-flavoured, and juicy, separates freely from the stone, the kernel, which is sweet, is eaten in France. Beginning of August. Dessert and Preserves.

SYN.—*D'Hollande, Amande Aveline, Anane, Parsigue.*

BRUSSELS, 2nd size, 2nd quality, oval, sides flattened. This is not a very fine fruit, but is hardy and a good bearer, especially on light soils, skin pale yellow dotted with white in the shade, but often marked with russety brown next the sun, flesh yellow, rather firm, with a lively but not rich flavour, kernel bitter. Middle of August. Preserves.

EARLY PEACH, 1st size, 1st quality, oblong and compressed. New variety, said to be very large and excellent, skin slightly downy, pale orange in the shade, fine bright orange, with a few ruddy spots in the sun, separates from the stone, flesh orange coloured, very rich and juicy, kernel bitter. Middle of July. Dessert.

SYN.—*Large Early, Gros Precoce.*

GROS PECHE, 1st size, 1st quality, roundish and compressed. This variety is originally from Piedmont, and considered the largest and finest sort in cultivation, being often as large as a peach of medium size, is very handsome, and of delicious flavour, skin yellow in the shade, but deep orange mottled with dark brown on the sunny side, flesh of a fine yellow saffron colour, juicy, rich, and high-flavoured, stone pervious, kernel bitter. End of July. Dessert.

SYN.—*Royal Peach, Large Peach, Anson's Imperial, Du Luxembourg.*

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Apricots.

GROS ROUGE, 1st size, 1st quality, roundish. Very large and excellent variety, habit of tree hardier than that of the Moor Park, skin deep orange tinged, with red, flesh yellowish red, juicy, rich, and excellent, kernel bitter. Beginning of August. Dessert.

SYN.—*Large Red.*

HEMSKIRKE, 1st size, 1st quality, roundish and compressed. Large and beautiful variety of English origin, of the finest quality, and strongly resembles the Moor Park, with the exception of its stone not being perforated like that variety, it also ripens earlier, skin orange, with a red cheek, flesh bright orange, tender, rather more juicy and sprightly than the Moor Park, with a rich luscious plum-like flavour, kernel bitter. End of July. Dessert.

MASCULINE, RED, 3rd size, 2nd quality, roundish. This is rather a small fruit, but a good deal cultivated in America, where it is very hardy, ripening earlier than the other varieties, and producing good and regular crops, skin bright yellow, tinged with deep orange, and spotted with dark red on the sunny side, flesh yellow, juicy, with a slightly musk but pleasant flavour, kernel bitter. Beginning of July. Dessert and Preserves.

SYN.—*Early Masculine, Brown Masculine.*

——— WHITE, 3rd size, 2nd quality, roundish. Resembles the Red Masculine in all respects, colour excepted, it is also later in ripening, skin nearly white, with a little reddish brown on one side, flesh white, delicate, a little fibrous, adheres slightly to the stone, and has a delicate pleasant juice, kernel bitter. Middle of July. Dessert and Preserves.

SYN.—*Abricot Blanc, White Algiers.*

MOOR PARK, 1st size, 1st quality, roundish. This very excellent variety was first introduced and cultivated upwards of one hundred and fifty years ago, skin orange in the shade, but deep orange or brownish red in the sun, marked with numerous dark specks and dots, flesh quite firm, bright orange, parting free from the stone, quite juicy, with a rich luscious flavour, stone pervious along the back, kernel bitter. Middle of August and beginning of September. Dessert.

SYN.—*Anson's, Dunmore Breda, Hunt's Moorpark, De Naucy Temple's, Watton Moorpark, Dunmore, Sudlow's Moorpark.*

MUSCH-MUSCH, 3rd size, 1st quality, round. This delicious little apricot takes its name from the city of Musch, on the frontiers of Turkey in Asia, but it is also common about Alexandria, and in Northern Egypt it is said to be in such abundance that the dried fruit becomes an article of commerce, the tree is rather delicate, requires a good situation, skin deep yellow, with a little orange on the sunny side, flesh yellow, with a transparent pulp, tender, melting, and very sweet, kernel sweet. Beginning of August. Dessert.

SYN.—*D'Alexandrie.*

NEW ROYAL, 1st size, 1st quality, oval, slightly compressed. Large and excellent French variety, raised in the Royal Gardens of the Luxembourg, and is considered equal, if not superior, to the Moor Park, skin dull yellow, with an orange cheek, slightly tinged with red, flesh pale orange, firm, and juicy, with a rich and vinous flavour, separates freely from the stone, kernel slightly bitter. Beginning of August. Dessert.

OLD ORANGE, 3rd size, 2nd quality, roundish. A small apricot of a deep yellow and reddish colour, valuable for tarts only. Culinary. August.

ROYAL ORANGE, 1st size, 2nd quality, roundish. Flavour tolerable for dessert, esteemed by many for preserving, it makes delicious tarts, even before the fruit begins to acquire colour; skin firm, orange, sometimes tinged with a ruddy tint next the sun, flesh dark orange, moderately juicy, but often dry and insipid, unless ripened off in a warm room, kernel sweet.

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ROMAN, 1st size, 1st quality, oblong, slightly compressed. This is one of the hardiest and most vigorous of apricot trees, producing good crops, even in unfavourable situations, where few of any other sorts will succeed, it is, therefore, though inferior, a valuable sort for northern or cold situations, the blossoms bearing a severe frost without injury; skin pale yellow, or very richly dotted with red, flesh dull yellow, soft, rather dry, but if ripened for a few days in a warm room the flavour becomes tolerably good, kernel bitter. Beginning of August. Dessert and Culinary.

SYN.—*Abricot Common, Germine, Grose Germine, Transparent.*

SAINT AMBROISE, 1st size, 1st quality, roundish. Recently introduced from France, is of the Moorpark race, but hardier as a tree, and the fruit is of equal excellence. Middle of August. Dessert.

SHIPLEY'S, 1st size, 1st quality, oval. Very excellent early variety, nearly equal to the Moorpark in flavour, and much more productive, skin orange and deep yellow, flesh yellow, juicy, and tolerably rich, kernel bitter. End of July. Dessert.

SYN.—*Blenheim, Siphley's Large.*

TURKEY, 1st size, 1st quality, roundish. This is a fine old variety, ripening after the Moorpark, from which it is easily known by its impervious stone and sweet kernel, skin fine deep yellow in the shade, mottled with brownish orange in the sun, flesh pale yellow, firm, quite juicy, with a flavour in which there is an excellent mingling of sweet and acid. End of August to the middle of September. Dessert.

SYN.—*Large Turkey.*

NECTARINES.

	s.	d.	
DWARF	1	6 to 2/6	each.
DWARF Trained	5	0 to 6/6	..
RIDER	2	6 to 3/6	..
RIDER Trained	6	6 to 10/6	..

PICKED TREES SELECTED IN NURSERY CHARGED HIGHER.

BALGON, 1st size, 1st quality, roundish, oval. This is one of the very best of nectarines, leaves with reniform glands; skin pale green, with a fine red cheek, flesh pale green, melting, and very rich, flowers small. End of August and beginning of September.

BRIMON, 1st size, 1st quality, roundish. This fine variety ought to be in every collection, skin pale yellow in the shade, marbled with dark red next the sun, flesh melting, greenish yellow, deep red next the stone, flavour rich, leaves with reniform glands, flowers small. End of August and beginning of September.

DUC DE TELLIERS, 1st size, 1st quality, roundish. Very excellent variety, resembles the Elruge, but more prolific, skin pale green, with a marbled purplish red cheek, flesh greenish white, pale red at the stone, melting and rich, leaves with reniform glands, flowers small. End of August and beginning of September.

SYN.—*Du Tilliers, Duc de Telle.*

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Nectarines.

DOWNTON, 1st size, 1st quality, roundish. This variety was raised by Mr. Knight, and in quality, appearance, and season seem to be intermediate between Violette Hartin and the Elruge, ripening a few days earlier than the latter; skin pale green, with a violet red cheek, flesh pale green, slightly red at the stone, melting, rich, and very good, leaves with reniform glands, flowers small. End of August.

ELRUGE, 2nd size, 1st quality, roundish oval. This is an English variety, and everywhere esteemed as one of the finest of Nectarines; skin with pale green ground, but when fully exposed it is nearly covered with deep violet or blood-red, dotted with small brownish specks, flesh pale green to the stone, or slightly stained there with pale red, melting, rich, and very juicy, with an excellent flavour, leaves with reniform glands, flowers small. Beginning of September.

SYN.—*Claremont, Spring Grove.*

GOLDEN, 2nd size, 2nd quality, roundish oval. Very handsome English variety, and when fully ripe its wax-like appearance is very beautiful; skin of a fine bright waxen colour, with a little scarlet next the sun, flesh orange yellow, firm but juicy, sweet, and tolerably good, leaves with reniform glands, flowers small. Middle of September.

SYN.—*Orange, Fine Gold Fleshed.*

HARDWICKE SEEDLING, 2nd size, 1st quality, roundish oval. This variety was raised at Hardwicke Hall, in Suffolk, and is one of the best and hardiest of Nectarines, resembles the Elruge but more productive; skin pale green, with a deep violet red cheek, flesh pale green, slightly red at the stone, juicy, melting, rich, and high flavoured, leaves with reniform glands, flowers small. Middle of August.

HUNT'S TAWNY, 2nd size, 1st quality, roundish oval. This is a very early and distinct variety well worthy of general cultivation, as it is not only early but hardy, and an abundant bearer; skin pale orange, with a dark red cheek, mottled with numerous russety specks, flesh deep orange, juicy, melting, rich, and very good, leaves serrated with glands, flowers small. Beginning or middle of August.

SYN.—*Hunt's Large Tawny, Hunt's Early Tawny.*

IMPERATRICE, 1st size, 1st quality, roundish. Large and very excellent variety; skin pale green, nearly covered or marbled with dark red, flesh pale green, with a little red next the stone, melting and rich. End of August and beginning of September. SYN.—*Empress.*

ITALIAN, 1st size, 2nd quality, globular, or nearly so. Very large variety, and some seasons is of excellent quality; skin greenish yellow in the shade, marbled with dark red next the sun, interspersed with a thin grey russet, flesh firm, of a pale yellowish colour, but very red at the stone, juice abundant, often rich, and very excellent, leaves with reniform glands, flowers small. Beginning and middle of August. SYN.—*Brugnon.*

MURREY, 2nd size, 1st quality, roundish ovate. This is a fine old English variety, but rather a shy bearer, skin pale green, with a dark red cheek, flesh greenish white, melting, sweet, and of good flavour, stone almost smooth, leaves with reniform glands, flowers small. Middle and end of August.

SYN.—*Black Murrey.*

NEWINGTON, 1st size, 1st quality, roundish. Very good variety of English origin, its fruit should hang on the tree till it begins to shrivel, as the flavour is thereby improved; skin pale greenish yellow, nearly covered with red, and marbled with dark red, flesh firm, pale, but deep red next the sun, juicy, sweet, and rich, with an excellent vinous flavour, leaves serrated without glands, flowers large. Middle of September.

SYN.—*Scarlet Newington, Old Newington, Smith's Newington, Sion Hill, D'Angleterre, Anderson's Round.*

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NEWINGTON EARLY, 1st size, 1st quality, roundish ovate. This is one of the very best of Clingstone Nectarines, is larger, earlier, and superior in flavour to the Newington, skin pale green in its ground, but nearly covered with bright red, much marbled and mottled with a very dark red, and coated over with a thin bloom, flesh firm, greenish white, deep red at the stone, juicy, sugary, rich, and very excellent, leaves serrated without glands, flowers large. Beginning of September.

SYN.—*Early Black Newington, New Dark Newington, Lucombe's Black, Early Black.*

NEW RED ROMAN, 1st size, 1st quality, roundish. New and very excellent, resembling the old Red Roman, but larger, and ripens earlier, skin greenish yellow, with a dark red cheek, marked with dull russety specks, flesh firm, greenish yellow, with red at the stone, flavour rich, leaves with reniform glands, flowers large. Middle of August.

PITMASTON ORANGE, 1st size, 1st quality, roundish ovate. An English variety, raised by Mr. Williams of Pitmaston, near Worcester, and is considered the best yellow fleshed Nectarine, skin rich orange, with a brownish red cheek, streaked where the colours join, flesh deep yellow, but red at the stone, melting, rich, juicy, and sweet flavoured. End of August and beginning of September. Leaves with globose glands, flowers large.

SYN.—*Williams' Orange, Williams' Seedling.*

RED ROMAN, 1st size, 1st quality, roundish. Mentioned by Lindley in his "Guide to the Orchard," as very excellent; skin greenish yellow, with a brownish red cheek, marked with brown russety specks, flesh firm, greenish yellow, and deep red at the stone, juicy, with a rich, high, vinous flavour, leaves with reniform glands, flowers large. End of August and beginning of September.

SCARLET, 1st size, 1st quality, roundish. Large and excellent, hardy and productive, skin pale yellow, green in the shade, but covered with purplish red next the sun, and mottled with numerous brown dots, flesh whitish, with much red at the stone, melting, juicy, and high flavoured, flowers small. Beginning of September.

SUPERB, NEW.

VIOLETTE GROSSE, 1st size, 1st quality, roundish. Large variety of Violette Hative, skin pale green, marbled with violet red, flesh melting, less vinous than Violette Hative, but an excellent fruit, leaves with reniform glands, flowers small. Beginning of September.

SYN.—*Violette de Coureon, Grosse Fruhe Violette.*

VIOLETTE HATIVE, 1st size, 1st quality, roundish. This sort always takes the highest rank among this class of fruits, being of delicious flavour, fine appearance, hardy and productive, skin pale yellowish green in the shade, covered with dark purplish red, and mottled with brown dots next the sun, flesh whitish, but much rayed with red at the stone, melting, juicy, and rich, leaves with reniform glands, flowers small. End of August and beginning of September.

SYN.—*Aromatic, Hampton Court, Violette Musquee, Early Brugnon.*

WHITE, NEW, 1st size, 1st quality, nearly round. The finest light-skinned variety, beautiful, hardy, and excellent, bearing abundant crops, skin white, sometimes a slight tinge of red where exposed, flesh white and tender, very juicy, with a rich vinous flavour, leaves with reniform glands, flowers large. End of August and beginning of September.

SYN.—*Neat's White, Large White, Flanders, Cowdray White, Emmerton's New White.*

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Nectarines.

WHITE, OLD, 1st size, 1st quality, roundish oval. Supposed to have been introduced from Asia, it resembles the preceding in flavour, perhaps a little richer, more tender, but less productive, skin white, slightly tinged with red, flesh white, tender, juicy, and rich, leaves with reniform glands, flowers large. End of August and beginning of September.

SYN.—*White.*

PEACHES.

Peaches.

	s.	d.			
DWARF	1	6	to	2/6	each.
DWARF Trained	5	0	to	7/6	—
RIDER	2	6	to	3/6	—
RIDER Trained	7	6	to	10/6	—
IN POTS	3	6	to	5/	—

SINGLE TREES SELECTED IN NURSERY CHARGED HIGHER.

ACTON SCOT, 2d size, 1st quality, the apex narrow and depressed. Excellent, hardy, and very early, skin woolly, pale yellowish white, with a marbled red cheek, flesh pale to the stone, melting, sugary, and rich, with sometimes a slightly bitter flavour, leaves with globose glands, flowers large. Middle and end of August.

ADMIRABLE, LATE, 1st size, 1st quality, roundish oval. This is a most delicious variety, originated in France many years ago, and is highly esteemed, being hardy and productive, skin pale yellowish green, with a pale red cheek, marbled with red, flesh greenish white, red at the stone, very juicy, melting, and of excellent flavour, leaves with globose, glands, flowers small. Middle and end of September.

SYN.—*La Royale, Bourdine, Peche Royal Boudin, Narbonne.*

——— EARLY, 1st size, 1st quality, roundish. Very excellent French Peach, early and very prolific, skin yellowish white, with a red cheek, flesh white, with red next the stone, melting and juicy, flavour sweet and rich. Leaves with globose glands, flowers large. Middle of August.

SYN.—*Admirable, L'Admirable.*

——— SCARLET, 1st size, 1st quality.

SYN.—*Dragon.*

——— LATE WARBURTON, 1st size, 1st quality, roundish oval. New and excellent variety, equal to the Noblesse, and a month later, is likely to supersede all the other late Peaches, skin pale yellow in the shade, with a bright red cheek where exposed, flesh yellowish white, melting, and juicy, with a high rich, and luscious flavour, leaves with globose glands. Middle of September.

SYN.—*Warburton Admirable.*

BARRINGTON, 1st size, 1st quality, roundish ovate. Very large and handsome variety, tree vigorous and very hardy, skin pale yellow, with a deep red marbled cheek, flesh slightly tinged with red at the stone, melting, juicy, and very rich, and one of the finest quality, leaves with globose glands, flowers large. Middle of September.

SYN.—*Buckingham, Mignonne, Colonel Ansley's.*

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BELLE CHEVREUSE, 1st size, 1st quality, roundish. Swollen on one side of the suture, skin yellowish, unusually downy, flesh whitish yellow, tinged with red under the skin, marbled with rose colour at the stone, which is free, leaves with reniform glands, flowers small. Beginning of September.

BELLEGARDE, 1st size, 1st quality, round and regular. This very excellent French Peach is one of the handsomest and most delicious, skin yellowish green, with a red cheek, often streaked with dark purple, flesh slightly tinged with red at the stone, a little firm, but very melting, juicy, and high flavoured, flowers small. End of August and beginning of September.

SYN.—*Galande Violette, Hative Brentford, Mignonne, French Royal George.*

CATHERINE, 1st size, 1st quality, roundish oval. An old but very excellent English variety, skin yellowish green, much sprinkled with red dots, the exposed cheek of a lively red, streaked with darker red, flesh firm, yellowish white, but dark red at the stone, very juicy, rich, and excellent, leaves with reniform glands, flowers small. Middle and end of September.

CHANCELLOR, 1st size, 1st quality, oval. This is a celebrated French Peach of the highest excellence. It is said to have been originated by M. De Sequier of Paris, then Chancellor of France, skin pale yellowish white, with a dark crimson cheek, flesh very deep red next the stone, melting, and of a rich vinous flavour, leaves with reniform glands, flowers small. Middle of September.

SYN.—*Noisette, Late Chancellor, Stewart's Late Galande, Edgar's Late Melting.*

CÆSAREAN, 1st size, 1st quality, roundish, middle of August and end of September.

DOUBLE MONTAIGNE, 2nd size, 1st quality, roundish. This is a high flavoured and very beautiful French Peach, much resembling the Noblesse, skin pale greenish white, with a soft red cheek, marbled with darker red at maturity, flesh white to the stone, very delicate and melting, with a plentiful and high flavoured juice, leaves serrated without glands, flowers large. Middle of August.

SYN.—*Double Mountain, Mountauban.*

DOUBLE SWALSH, 1st size, 1st quality, roundish. Large and very excellent, originated in Holland, skin whitish, sprinkled with red dots, with a deep red cheek, flesh whitish, but red at the stone, melting, and very rich, leaves with reniform glands. Middle of August and beginning of September.

SYN.—*Swalze Swalch.*

EARLY ANNE, 2nd size, 2nd quality, round. An old English variety, very early, skin white, with a faint tinge of red next the sun, flesh white to the stone, soft, melting, sweet, and of a pleasant flavour, leaves serrated without glands, flowers large and nearly white. End of July and beginning of August.

SYN.—*Anne, Green Nutmeg.*

EARLY TILLOTSTON, 2nd size, 1st quality, round. From New York, is unquestionably one of the most desirable of all the very early melting Peaches, it is hardy and very productive, skin nearly covered with red, the ground colour yellowish white, thickly dotted, and the exposed cheek a dark red, flesh whitish, but red at the stone, melting, juicy, with a rich and highly delicious flavour, leaves deeply serrated, without glands, flowers large.

FLAT PEACH OF CHINA, 3rd size, 2nd quality, flattened at both ends. A very singular variety from China, the fruit is of so small size and so much flattened at both ends, that only the skin and stone remain, the flesh part being crowded on either side, the tree is of a dwarf habit, and well suited for forcing or pot culture, skin pale yellowish green, mottled with red next the sun, flesh free, pale yellow, with red round the stone, sweet and juicy, with slight nut-flavour, flowers large.

SYN.—*Chinese Peach, Peen To, Java Peach.*

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Peaches.

GEORGE THE FOURTH, 1st size, 1st quality, round. An American variety of the highest excellence, bearing regular and abundant crops, habit of tree hardy and vigorous, skin pale yellowish white, finely dotted with bright red, and deepening into a fine dark red next the sun, flesh pale, marked with red at the stone.

HARDY GALANDE, 1st size, 1st quality, round. Very excellent, is hardier than the Bellegarde or Galande, and succeeds budded on the Muscle plum stock, skin yellowish green, with a lively red cheek next the sun, flesh yellowish, slightly red at the stone, melting, juicy, rich, and delicious. Middle and end of August.

INCOMPARABLE EN BEATTE, 1st size, 2nd quality, round. One of the handsomest and most beautiful of peaches, is a fine market fruit, skin yellowish green in the shade, with deep brown next the sun, flesh yellowish, melting, juicy, and tolerably rich, leaves with globose glands, flowers small. Middle of September.

LATE PURPLE (JOHNSTON'S), 1st size, 1st quality. Beginning of September.

MOUNTAINEER, 1st size, 1st quality, roundish. Large and excellent, is a hybrid between Red Nutmeg Peach and Violette Hative Nectarine; fruit sometimes partly smooth, leaves crenate with globose glands, flowers large.

MADELINE DE COURSON, 2nd size, 1st quality, round and flattened. This very excellent variety is of French origin, hardy, and very productive, skin pale yellowish white, with a lively red cheek, flesh white, slightly red at the stone, juicy, and melting, with a rich and vinous flavour, leaves serrated without glands, flowers large. Middle and end of August.

SYN.—*True Red Magdalene*, *French Magdalene*, *Madaline Rouge*, *Rouge Paysanne*.

MALTA, 1st size, 1st quality, roundish. A most delicious variety, habit of tree very healthy, hardy, and long lived, skin dull green, marked on the side next the sun with purple spots, flesh greenish, with a little dark red at the stone, very juicy and melting, with a peculiar rich vinous flavour, keeps well after being gathered, leaves serrated without glands, flowers large.

SYN.—*Belle de Paris*, *Malte de Normandie*, *Italian*, *Peche de Malta*.

MIGNONNE GROSSE, 1st size, 1st quality, roundish and depressed. A French variety, and is everywhere esteemed as one of the most delicious of Peaches, a hardy and regular bearer, ripening before the Royal George, skin greenish yellow, mottled with red, and having a purplish red cheek, flesh yellowish white, marked with red at the stone, melting and juicy, with a rich vinous flavour, leaves with globose glands, flowers large. Middle of August.

SYN.—*Royal Kensington*, *Grimwood's Royal George*, *Belle Bause*, *Royal Sovereign*, *Superb*, *Royal French Mignonne*.

———— HUXTON.

MORRISANIA, 1st size, 1st quality, oval. Very large American variety, originated by Martin Hoffman, Esq., but first cultivated in the garden of Governor Morris of Morrisania, near New York, skin greenish white, with a brownish red cheek, flesh pale yellow, firm, juicy, with sweet and rich flavour, leaves with globose glands, flowers small. Middle of September.

SYN.—*Hoffman's Pound*, *Morrison's Pound*, *Brevort's Morris*, *Brevort's Seedling*.

NEWINGTON, OLD, 1st size, 1st quality, roundish. An old and highly esteemed English variety, skin yellowish white, with a fine red cheek marked with streaks of dark red, flesh pale yellowish white, deep red at the stone, firm, but very juicy and rich, leaves serrated without glands, flowers large. Middle of September.

SYN.—*Newington*, *Large Newington*.

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NEWINGTON, SMITH'S, 2nd size, 1st quality, roundish oval. An English variety, and one of the best of Early Clingstone Peaches, skin pale straw colour, with a lively red cheek, streaked with purple, flesh firm, pale yellow and light red at the stone, leaves serrated without glands, flowers large. End of August and beginning of September.

SYN.—*Early Newington, Smith's Early Newington.*

NOBLESSE, 1st size, 1st quality, roundish oblong. Well known to be one of the largest, most delicious, and most valuable sorts in cultivation, tree hardy and productive, yielding regular and abundant crops of beautiful pale fruit, skin slightly downy, with a delicate red cheek, clouded with darker red, flesh greenish white, melting, very juicy, and rich, with a very high and luscious flavour, leaves serrated without glands, flowers large. End of August and beginning of September.

SYN.—*Vanguard, Mellish's Favourite, Lord Montague's Noblesse.*

NUTMEG, RED, 3rd size, 2nd quality, roundish. A small and rather inferior Peach which has long been cultivated on account of its earliness. The tree grows slowly, and is of dwarf habit, melting, with a sweet and pleasant flavour, leaves small, with reniform glands, flowers large. End of July.

SYN.—*Early Red Nutmeg, Brown Nutmeg, Avant, Rouge, Avant Peche de Troyes.*

ROYAL CHARLOTTE, 1st size, 1st quality, roundish ovate. Very excellent and highly esteemed, skin greenish white, with a deep red marbled cheek, flesh white, pale red at the stone, melting, juicy, rich, and excellent, leaves serrated without glands, flowers small. Beginning of September.

SYN.—*New Royal Charlotte, Kew Early Purple, Lord Nelson's, Grimwood's Royal Charlotte, Lord Falconberg's.*

——— GEORGE, 1st size, 1st quality, globular. One of the very finest of European peaches, is a regular and moderate bearer, skin pale or white, thickly sprinkled with red dots, and the cheek of a rich deep red, slightly marbled, flesh whitish, very red at the stone, melting, juicy, and of the highest flavour, leaves serrated without glands, flowers small.

SYN.—*Millet's Mignonne Superb, Early Royal George, Lockyer's Mignonne, Madeline a Petite Fleurs.*

SNOW PEACH, 1st size, 1st quality, globular. A remarkably beautiful fruit of American origin, the blossoms and fruit are white, and the foliage and bark of a light green, trees very hardy and productive, skin thin, clear beautiful white on all sides, flesh white to the stone, melting, and juicy, with a sweet flavour, leaves with reniform glands, flowers small. Beginning of September.

TETON DE VENUS, 1st size, 1st quality, roundish oval. Large and very excellent, skin greenish yellow in the shade, lively red next the sun, flesh melting, greenish yellow, red at the stone, very juicy and sugary, leaves deeply crenate, with globose glands, flowers small. End of September.

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Figs.

FIGS.

In Pots, 3/6 to 5/ each.

ANGELIQUE, 2nd size, 2nd quality, pyramidal or obovate. Skin yellow, mottled with greenish white specks, pulp white, having the interior, tinged with red; in the neighbourhood of Paris this sort produces two crops annually. August.
Syn.—*Melitte, Concourelle, Blanche.*

BROWN TURKEY, 1st size, 1st quality, oblong or pyriform. Skin dark brown, covered with a thick blue bloom, pulp red, and of a very delicious flavour. undoubtedly one of the very best for open air culture, and is perhaps the very hardiest, but not over luxuriant, regular and abundant bearers. August.
Syn.—*Brown Naples, Brown Italian, Lee's Perpetual, Ashbridge Forcing, Blue Burgundy, Large Blue.*

BRUNSWICK, 1st size, 1st quality, pyramidal. Skin pale green, tinged with yellow on the shaded side, sprinkled with small pale brown specks next the sun, pulp pink in the interior, nearly white next the skin, extremely rich, sweet. One of the most useful of hardy figs, best adapted for wall culture. Middle of August.
Syn.—*Hanover, Brown Hamburgh, Black Naples, Bayswater, Madonna.*

DE SAINT JEAN, 1st size, 1st quality, oblong. French variety, said to be large, excellent, and very productive. August.

EARLY VIOLET, 3rd size, 1st quality, obovate. An old variety, very hardy, bearing in the open air. Beginning of August.

GENOA, LARGE WHITE, 1st size, 1st quality, obovate. Skin thin pale yellow, pulp red, rich, and well flavoured, bears two crops annually. End of August.

ISCHIA WHITE, 3rd size, 1st quality, roundish, obovate, skin yellowish green, very thin, and when fully ripe, the dark coloured pulp appears through it, pulp purplish, rich, and high flavoured, a moderate grower, and a good bearer. Middle of August.
Syn.—*Green Ischia.*

——— BLACK, 2nd size, 1st quality, roundish. Skin dark violet, becoming almost black when fully ripe, pulp deep red and of a very sweet and luscious flavour; one of the most fruitful sorts, but liable to the attacks of birds if not protected. End of August.
Syn.—*Early Forcing, Blue Ischia.*

——— BROWN, 2nd size, 1st quality, roundish, obovate. Skin light or chestnut brown. Pulp purple, sweet, and excellent; a good variety, with rather a thin skin, which renders it liable to burst when fully ripe; hardy and a good bearer. Middle of August.
Syn.—*Chestnut, Chestnut-coloured Ischia.*

——— YELLOW, 1st size, 1st quality, pyramidal. Skin yellow when fully ripe, pulp purple and well flavoured; of very luxuriant growth, the leaves large and not much divided, but rather a shy bearer. September.
Syn.—*Cyprus.*

MARSEILLES, 2nd size, 1st quality, roundish, obovate. Skin nearly white, with a little yellowish green, pulp white, rather dry, but sweet and rich; a favourite sort for forcing and raising under glass, will even succeed in the temperature of a pine stove. August.
Syn.—*White Marseilles, White Naple, White Standard, Figue Blanche.*

——————— BLACK.

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Figs

MALTA, 3rd size, 1st quality, roundish, apex compressed. Skin light brown, pulp pale brown and of a rich sweet flavour; small but very rich if allowed to hang on the tree till it shrivels. End of August.
SYN.—*Small Brown.*

NEKII, 3rd size, 1st quality, roundish obovate. Skin greenish yellow, pulp red, flavour delicate and rich. Rather smaller and longer than the Marseilles, is one of the most exquisite in flavour; and, according to Loudon, is the richest fig known in Britain; succeeds best in a low temperature under glass. Middle of August.

PREGUSSATA, 2nd size, 1st quality, roundish and flattened. Skin purplish brown in the sun, pulp deep red, with a luscious high flavour, seeds unusually small; this variety was introduced from the Ionian Isles. Is tolerably hardy, and productive, and succeeds well under glass. August to October.

WHITE, LARGE, 1st size, 1st quality, oblong, Skin white and thin, slightly transparent, pulp white, but often more or less tinged with purple, very sweet and rich. August.

SPANISH CHESTNUT.

From 1/ to 2/ each.

Spanish Chestnut.

The SPANISH VESCA, or CHESTNUT (*Castanea Vesca*). A stately and noble tree, the timber approaching that of the oak in strength and durability. The principal varieties are the following, and those marked thus * are the most prolific:—

*A BOIS JAUNE
*AMERICANA LUCIDA
ASPLENIFOLIA
*BRITONNE, from Brittany
COCHLEATA
*DEVONSHIRE
*DOWNTON
*FOLIIS AUREA VARIEGATA
LUCIDA, or Shining Leaved
*MACULATA, or Blotched Leaved
*MASTERS'
*MADEIRIENSIS
*NOIRE
*POURTALONNE
*PRIME
*PROLIFIC
*ROQUE MOLLE

WALNUTS.

Erom 1/6 to 3/6 each.

Walnuts.

COMMON WALNUT. SYN.—*Noyre Ordinaire.*
DUCK NUT.
HATIF.
HIGHFLYER. Middle size, fills well, and ripens early.
LARGE FRUITED. Shell tender, not so well filled as those of the other varieties.
SYN.—*Double Walnut. French Walnut.*
A COQUE TENDRE. SYN.—*Mesange*
TARDIF. SYN.—*Juglans Regia Serotina, Noyer de St Jean.*
THIN SHELLED.
YORKSHIRE. Not double but of a moderate size, fills and ripens well, shell moderately thin.

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NUTS AND FILBERTS.

Nuts and Filberts.

From 9*d*. to 1/ each.

BLUE SHELLED, 2nd size, ovate, husk smooth, shell thick, and of a bluish colour.
BOND NUT, 2nd size, ovate oblate, husk hispid, shell thin.
BURN, 2nd size, oval, husk hispid, shell thick.
COB, 1st size, ovate, slightly compressed, husk hispid, shell thick and hard, habit of tree very erect.
COB, GREAT, 1st size, roundish, husk hispid, shell thick. This one is the very largest.
CONSTANTINOPLE (CORYLUS COLURNA). Not worthy of cultivation as a fruit, but highly ornamental.
COSFORD, 1st size, oblong, husk hispid, shell thin. Very productive, and of good quality.
CUT-LEAVED (CORYLUS AVELLANA LACINIATA). Better adapted to the pleasure ground than the fruit garden.
DOWNTON, LARGE SQUARE, 1st size, husk smooth, shell thick, short, and obtusely four-sided, good.
FILBERT, FRIZZLED, or CAPE NUT, 2nd size, oval compressed, husk hispid, shell thick. A great bearer, and easily distinguished by its much laciniated husk.
FILBERT RED (CORYLUS TUBULOSA), 2nd size, ovate, husk, hispid, shell thick, easily known from other sorts by the red of skin, covering the kernel; has a peculiar and excellent flavour.
FILBERT, WHITE, 2nd size, ovate, husk hispid, long and tubular, shell thick, flavour good, kernel with a white skin. This and the preceeding sort are the best two in cultivation.
JEEVES' SEEDLING, 1st size, roundish ovate, husk hispid, shell thick, flavour good.
PURPLE-LEAVED (CORYLUS ATROPURPUREA). Very ornamental variety, with deep purple leaves.
SPANISH, 1st size, oblong, husk smooth, shell thick. This is one of the very largest, quality good.

BLACK CURRANTS.

Black Currants.

From 3/ to 5/ per Dozen.

BANG-UP, 2nd size, 2nd quality. Very productive variety, bearing its fruit in thick-set clusters.
BLACK GRAPE (OGDEN'S), 1st size, 1st quality. Very excellent variety, equal to Black Naples, and earlier.
BLACK NAPLES, 1st size, 1st quality. Large and handsome; this and the Black Grape are the finest varieties in cultivation, the berries often measuring three-fourths of an inch in diameter; the early expansion of the leaves and blossoms of this sort, as well as the later ripening of its fruit, make it easily recognised from all others of the same class.
COMMON BLACK, 2nd size, 2nd quality. This is the well-known Black English Currant, the berries are quite black, and borne in clusters of four and five.
GREEN FRUITED BLACK, 2nd size, 3rd quality. Fruit of a dingy pallid colour.

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RED CURRANTS.

From 3/ to 6/ per Dozen.

Red Currants

MAY'S VICTORIA or RABY CASTLE, 1st size, 1st quality. Very large and excellent branches, five or six inches in length, the fruit bright red, and hangs on the bush a month later than any other.
CHAMPAGNE, 1st size, 2nd quality. Large and handsome currant, of a pale pink or flesh colour, rather acid, but admired for its pretty appearance.
CHERRY RED, 1st size, 1st quality. Very excellent French variety with short bunches and large berries. Deserves a south wall.
DUTCH RED, 1st size, 1st quality. Fruit of a fine red colour, in rich clusters two to three inches long.
DUTCH RED, NEW, 1st size, 1st quality.
GOODWIN'S RED, 1st size, 1st quality. From France, very large and late, it is of very robust growth and would support itself as a standard of three feet stem.
HOUGHTON CASTLE. New and fine.
KNIGHT'S LARGE RED, 1st size, 1st quality. Very excellent variety, a seedling of Mr. Knight's, and one of the largest currants, being a third larger than Red Dutch.
———— EARLY RED, 2nd size, 1st quality. Ripens ten days earlier than any other sort.
———— SWEET RED, 1st size, 1st quality. Not sweet, but much less acid than the White Dutch varieties.
ROCK, or WOOLLY LEAVED, 1st size, 2nd quality. This is a strong and vigorous grower, esteemed by many for its lateness.
RUSSIAN.
STRIPED FRUITED, 1st size, 1st quality. Very beautiful German variety, fruit distinctly striped with white and red.

WHITE CURRANTS.

From 3/ to 6/ per Dozen.

White Currants.

DUTCH WHITE, 1st size, 1st quality. Fruit of a fine yellowish white colour, with a very transparent skin, considerably less acid than the Red Dutch, and on that account more preferred for table use.
VICTORIA WHITE. Fine large fruit.
PEARL WHITE. New and fine.
SPEARY'S WHITE. New and fine.

GOOSEBERRIES.

THOSE MARKED THUS * ARE THE LANCASHIRE PRIZE, OR EXTRA LARGE SORTS.

From 3/ to 9/ per Dozen.

Gooseberries.

*ABRAHAM NEWLAND (JACKSON'S), 1st size, 1st quality, oblong. Skin whitish.
*ALBION.
AMBER, 3rd size, 2nd quality, roundish. Skin yellow and smooth, very productive.

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Gooseberries.

ANDREW FAIRSERVICE. Skin yellow.
*BAILLIE
BALL YELLOW, 2nd size, 1st quality, roundish. Skin yellow and smooth, a good bearer.
*BANG-UP (BILLINGTON'S).
*BIRD LIME. Skin yellow.
BLACK PRINCE (SHIPLEY'S), 2nd size, 3rd quality, roundish. Skin dark red and downy.
*BLOOD HOUND. Skin red.
*BONNY LASS (CAPPER'S), 1st size, 2nd quality, oblong. Skin whitish.
*BONNY ROGER (DIGGLE'S), 1st size, 2nd quality, obovate. Skin yellow and smooth.
BRIGHT VENUS (TAYLOR'S), 2nd size, 1st quality, obovate. Skin whitish.
*BRITANNIA (LISTER'S), 1st size, 3rd quality, obovate. Skin yellow and downy.
*BRITISH CROWN (BOARDMAN'S), 1st size, 1st quality, roundish. Skin red.
*BRITISH QUEEN, 1st size, 2nd quality, oblong. Skin reddish, generally smooth, and very large.
*BROOM GIRL. Skin yellow.
*BUMPER. Skin green.
*BUNKER'S HILL (CAPPER'S), 1st size, 2nd quality, roundish. Skin yellow and smooth.
*CÆSAR (HUTTON'S), 1st size, 2nd quality, oblong. Skin red and hispid.
CALDWELL, WHITE. Skin whitish.
*CAPTAIN, RED, 1st size, 1st quality, oblong. Skin red and hispid.
*———— WHITE, 1st size, 1st quality, oblong. Skin whitish and downy.
*CATHERINA. Skin yellow.
CHAMPAGNE, RED, 3rd size, 1st quality, roundish oblate. Skin red and hispid.
———— YELLOW, 3rd size, 1st quality, roundish. Skin yellow and hispid, very productive, and excellent.
———— WHITE, 3rd size, 1st quality, roundish oblate. Skin whitish and hispid.
*CHESHIRE CHEESE (HOPLEY'S), 1st size, 3rd quality, oblong. Skin yellow and smooth.
*———— LASS (SAUNDER'S), 1st size, 1st quality, oblong. Skin whitish and downy, very early.
———— LADY, 2nd size, 1st quality, oblong. Skin red and hispid, late, but excellent.
*COMPANION. Skin red.
*CONQUERING HERO. Skin red.
*CONQUEROR (FISHER'S), 1st size, 3rd quality, oblong. Skin greenish yellow, smooth.
*COTTAGE GIRL (HEAP'S), 1st size, 3rd quality, oblong. Skin greenish yellow and hispid.
*CROWN BOB (MELLING'S), 1st size, 1st quality, oblong. Skin red and hispid, very excellent.
CRYSTAL, 3rd size, 1st quality, roundish. Skin whitish and smooth, late, but a good bearer.
*DERBY RAM.
*DUCKWING (BEURDSELL'S), 1st size, 2nd quality, obovate. Skin yellow and smooth.
*DUKE OF BEDFORD.
*DRILL. Skin yellow
*EAGLE (COOK'S), 1st size, 1st quality, obovate. Skin whitish and smooth, an excellent variety.
*EMPEROR (ELLIOT'S).
*———— NAPOLEON (RIVAL'S), 1st size, 2nd quality, obovate. Skin red and smooth, late, but a good bearer.

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*ENGLISH YELLOW. Skin yellow, excellent.
ERROL DOCTOR.
*FARMER'S GLORY (BERRY'S), 1st size, 1st quality, obovate. Skin red and downy, a good bearer.
FAVOURITE (BATE'S), 2nd size, 2nd quality, oblong. Skin green and smooth.
*FIRE BALL (ELLIOT'S).
*FLEUR DE LIS. Skin whitish.
GILLIES' LATE, 2nd size, 1st quality, roundish. Skin green and hispid, late and good.
GLENTON GREEN, 2nd size, 1st quality, oblong. Skin green and hispid.
GLOBE YELLOW. Skin yellow.
——— SMALL RED, 3rd size, 1st quality, roundish. Skin red and smooth, has a sharp rich flavour.
——— WHITE.
GLORY OF RATCLIFF (ALLEN'S), 2nd size, 1st quality, oblong. Skin green and smooth.
GOLDEN CHAIN (BRATHERTON'S). Skin yellow.
*——— (FORBES'), 1st size, 3rd quality, oblong. Skin yellow and smooth.
——— DROP, 2nd size, 2nd quality, roundish. Skin yellow and downy.
——— LION (CHEADLEY'S), 2nd size, 1st quality, roundish oblate. Skin yellow and hispid, one of the earliest and best.
*——— ORANGE (JACKSON'S), 1st size, 3rd quality, oblong. Skin bright yellow.
*——— QUEEN (KAY'S), 1st size, 3rd quality, roundish. Skin greenish yellow.
GOODALL'S SEEDLING, 2nd size, 1st quality, roundish. Skin yellow and hispid.
*GOVERNESS (BRATHERTON'S), 1st size, 2nd quality, roundish oblate. Skin greenish white, and hispid.
GREEN GASGOIGNE, 3rd size, 1st quality, round. Skin green and hispid.
GREEN GAGE (PITMASTON'S), 2nd size, 1st quality, obovate. Skin green and smooth, very sugary, and hangs long.
*GREENWOOD (BERRY'S), 1st size, 2nd quality, oblong. Skin pale green and smooth, a good bearer.
*GREEN, PROVIDENCE (HASSEL'S). Skin green.
*GUIDO. Skin red.
*HEART OF OAK (MASSEY'S), 1st size, 1st quality, oblong. Skin green and smooth.
HEDGE-HOG, 2nd size, 1st quality, round. Skin whitish green and hispid.
HILL-TOP (M'CALL'S).
*HOPLEY'S SHANNON, 1st size, 1st quality, roundish. Skin green and smooth.
HOLE IN THE WALL (SCRYMOUGER'S), 1st size, 2nd quality, roundish. Skin dark red and hispid.
*HUNTSMAN (BRATHERTON'S), 1st size, 2nd quality, roundish. Skin dark red and hispid.
IRISH PLUM, 2nd size, 1st quality, roundish. Skin dark red and hispid.
IRONMONGER, 3rd size, 1st quality, roundish. Skin dark red and hispid.
——— (DELVIN), 3rd size, 1st quality, roundish oblate. Skin red and hispid.
JAM, or RASPBERRY, 3rd size, 1st quality, roundish. Skin dark red and hispid.
—— GOGAR, 3rd size, 1st quality, roundish. Skin red and hispid, preserves well.
—— (FLETCHER'S), 3rd size, 1st quality, roundish. Skin red and hispid.
JAY WING.
*JOLLY ANGLER'S (COLLIER'S), 1st size, 1st quality, oblong. Skin green and downy.
*——— BUTCHER (CAPPER'S).
*——— CUTLER (COOK'S).
*——— FARMER (CHAPMAN'S), 1st size, 3rd quality, oblong. Skin green and smooth.
*——— GUNNER (HARDCASTLE'S), 1st size, 3rd quality, oblong. Skin yellow and hispid.
*——— NAILER (BROMLEY'S), 1st size, 3rd quality, oblong. Skin yellow and hispid

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Gooseberries.

*JOLLY PRINTER (ACKERLEY'S), 1st size, 3rd quality, oblong. Skin dark red and smooth.
*JOLLY TAR (EDWARDS'), 1st size, 1st quality, obovate. Skin green and smooth, productive, and good.
KEEN'S SEEDLING, 3rd size, 1st quality, oblong. Skin bright red and hispid, earlier than Red Warrington.
KIPPINROSS SEEDLING.
*LADY OF THE MANOR (HOPLEYS'), 1st size, 2nd quality, roundish oblate. Skin whitish and hispid.
*LANCASHIRE LAD (HARTSHORN'S), 1st size, 2nd quality, roundish. Skin dark red and hispid.
*LANGLEY GREEN (MILL'S), 1st size, 2nd quality, roundish. Skin pale green and hispid.
*LEADER (PIGGOT'S). Skin yellowish.
*LAUREL (PARKINSON'S), 1st size, 1st quality, obovate. Skin pale green and downy.
*LEADER. Skin yellow.
*LION (WARD'S).
*—— WHITE, 1st size, 3rd quality, obovate. Skin whitish and hispid.
*LION'S PROVIDER. Skin red.
*LION. Skin whitish.
*LONDON (BANK'S). Skin red.
*LORD BYRON. Skin green.
*LORD CREW (HOPLEY'S), 1st size, 1st quality, oblong. Skin green and hispid.
*LOVER'S PERFUME.
*MAGISTRATE (DIGGLE'S), 1st size, 1st quality, obovate. Skin red and downy.
*MANCHESTER, WHITE. Skin whitish.
*MAREM, CRYSTAL.
MIGNONNE (DELVIN'S).
MISS BOLD, 2nd size, roundish. Skin red and downy, early, like Red Walnut, but better.
*NELSON'S WAVES (ANDREW'S), 1st size, 3rd quality, oblong. Skin dark green and hispid.
NEW CHURCH.
NON-SUCH (HORCOCK'S).
NONPAREIL, 2nd size, 1st quality, obovate. Skin dark green and smooth.
*NORTHERN HERO, 1st size, 3rd quality, obovate. Green and smooth.
*NICHOL'S SEEDLING, 1st size, 1st quality, oblong. Skin whitish, very large.
*NO BRIBERY (TAYLOR'S), 1st size, 2nd quality, obovate. Skin green and smooth.
NUTMEG, SCOTCH, 2nd size, 2nd quality, obovate. Skin green and smooth.
OCEAN GREEN (WAINMAN'S), 1st size, 3rd quality, oblong. Skin green and smooth.
OLD ENGLAND (RIDER'S), 1st size, 2nd quality, roundish oblate. Skin dark red and smooth.
ORLEANS, WHITE.
OSTRICH. Skin Whitish.
*PARAGON (BELL'S).
*PEACOCK. Skin green.
*PERTH HIGH SHERIFF.
*PEOVER PECHER (BELL'S), 1st size, 3rd quality, obovate. Skin dark green and smooth.
*PHŒNIX.
*PILOT. Skin yellow.
*PITMASTER.
PORCUPINE, DELVIN. Skin greenish.
*PRINCE OF ORANGE (BELL'S), 1st size, 2nd quality, oblong. Skin yellow and downy.

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*PRINCE REGENT (BOARDMANN'S), 1st size, 2nd quality, roundish. Skin dark red and smooth.
*PRINCESS ROYAL, 1st size, 1st quality, obovate. Skin greenish white and hispid.
PRIZE, PORTERFIELD, 2nd size, 1st quality, roundish. Skin red and hispid.
*PERFECTION (GREGORY'S), 1st size, 1st quality, roundish. Skin green and downy.
*QUEEN OF SHEBA (CROMPTON'S), 1st size, 1st quality, obovate. Skin whitish.
——— CAROLINE (LOVART'S), 2nd size, 2nd quality, obovate. Skin whitish and downy.
——— CHARLOTTE (PEER'S), 2nd size, 1st quality, oblong. Skin greenish white and hispid.
*——— OF ENGLAND.
*RADICAL (SMITH'S), 1st size, 2nd quality, roundish oblate. Skin whitish and hispid.
*RANTER (RINGLEY'S).
RASPBERRY, 3rd size, 1st quality, roundish. Skin dark red and hispid.
*RED BRITON. Skin red.
——— TURKEY, 3rd size, 1st quality, obovate. Skin red and smooth, an excellent jam berry.
*RIFLEMAN (LEIGH'S), 1st size, 1st quality, roundish. Skin red and hispid.
*ROARING LION (FARROW'S), 1st size, 2nd quality, oblong. Skin pale red and smooth.
ROB ROY, 2nd size, 1st quality, obovate. Skin red and hispid.
ROBINA (GORRIE'S).
*ROBIN HOOD (BELL'S), 1st size, 1st quality, oblong. Skin yellowish green and downy.
*ROOKWOOD (PROPHET'S), 1st size, 2nd quality, roundish. Skin yellow and hispid.
ROUGH RED (PITMASTON), 2nd size, 1st quality. Skin red and hispid, excellent.
——————— (SCOTCH), 3rd size, 1st quality, round, skin red and hispid.
— ——————— (SMALL DARK), 3rd size, 1st quality, round. Skin dark red and hispid.
ROYAL GEORGE, 2nd size, 2nd quality, oval. Skin green and smooth.
RUMBULDION, 3rd size, 2nd quality, roundish. Skin pale yellow and downy.
*SCORPION (SPEECHLEY'S).
*SHAKSPERE (DENNY'S), 1st size, 1st quality, roundish. Skin red and hispid.
*SIR JOHN COTGRAVE (BRATHERTON'S), 1st size, 3rd quality, obovate. Skin dark red and hispid.
*SLAUGHTERMAN. Skin red.
*SMILING BEAUTY (BEAUMONT'S), 1st size, 1st quality, oblong. Skin yellow and smooth.
SMOOTH GREEN, 1st size, 1st quality, obovate. Skin green and smooth, excellent.
*SOVEREIGN. Skin yellow.
*SPORTSMAN (CHADWICK'S), 1st size, 2nd quality, obovate. Skin dark red and smooth.
SULPHUR, 3rd size, 1st quality, roundish. Skin yellow and hispid.
*TALLY-HO. Skin whitish.
TEST (GILLIS').
*THRASHER (YATES), 1st size, 3rd quality, oblong. Skin greenish white.
*THUMPER. Skin green.
*TIM BOBBIN (CLEGG'S), 2nd size, 2nd quality, oblong. Skin greenish yellow and smooth.
*TOP-SAWYER (CAPPER'S), 1st size, 2nd quality, roundish. Skin pale red and hispid.
*TRIUMPHANT (DENNY'S), 1st size, 2nd quality, obovate. Skin red and hispid.
*TROUBLER (MOORE'S), 1st size, 3rd quality, roundish oblate. Skin green and hispid.
*TUMBLER.
*TURN-OUT. Skin green.
*VAN TYRE.
*VIPER (GORTON'S), 1st size, 2nd quality, obovate. Skin greenish yellow and smooth.
*WAITING MAID (GRUNDY'S).

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Gooseberries.

WALNUT, GREEN, 2nd size, 1st quality, obovate. Skin dark green and smooth.
———— RED, 2nd size, 2nd quality, obovate. Skin red and downy, a good bearer.
WARRIOR (KNIGHT'S), 1st size, 2nd quality, ovate. Skin light red and downy.
*WARRINGTON, RED, 1st size, 1st quality, roundish oblate. Skin red and hispid.
*WEATHERCOCK. Skin green.
*WELLINGTON'S GLORY, 1st size, 1st quality, roundish oblate. Skin whitish and downy.
*WHITE BRITON. Skin whitish.
WHITE ROSE (NEILL'S). Skin whitish, excellent.
*WHITE WINE, 1st size, 1st quality, roundish oblate. Skin whitish and smooth.
*WHITESMITH (WOODWARD'S), 1st size, 1st quality, roundish oblate. Skin whitish.
WILMOT'S EARLY RED, 2nd size, 2nd quality, roundish oblate. Skin dark red and smooth.
*WISTASTON HERO (BRATHERTON'S), 1st size, 2nd quality, oblong. Skin green and hispid.
*WONDER (ANDERSON'S). Skin red.
*WONDERFUL. Skin red.
YELLOW (DAVIS'). Skin yellow, excellent.
YAXLEY HERO (SPEECHLEY'S), 1st size, 1st quality, obovate. Skin red and hispid.
YELLOW SMITH, 3rd size, 1st quality, roundish oblate. Skin yellow and hispid.
*YOUNG SAMSON.

RASPBERRIES.

From 3/ to 9/ per Dozen.

Raspberries.

ANTWERP RED, 1st size, 1st quality. A Dutch variety, originally from the city of Antwerp, it is early and very productive, fruit large, dull red, conical and sweet.
———— YELLOW, or WHITE, 1st size, 1st quality, conical, pale yellow, sweet, and excellent, canes strong and vigorous, light yellow, with many bristles.
BARNET, 1st size, 1st quality. A fine English variety, considerably resembling the Red Antwerp, ripening early and very productive, fruit large, conical, or roundish, bright transparent purplish red, flavour rich and agreeable, bears carriage badly.
COMMON RED, 2nd size, 2nd quality, roundish. Light red, bears well, and though inferior to the Antwerp, is esteemed by many for flavouring liquors.
CORNWALL'S VICTORIA, 1st size, 1st quality.
FASTOLFF, 1st size, 1st quality, obtuse or roundish conical, bright purplish red, very rich and high flavoured, bearing for some time in succession, canes strong, erect and branching, light yellowish brown, with pretty strong bristles.
FRANCONIA, 1st size, 1st quality, obtuse, conical. Purplish red, flavour more tart and brisk than that of the Red Antwerp, canes strong, spreading, and branching, yellowish brown. This is perhaps the hardiest of the large Raspberries, and very productive, bears carriage, and excellent for preserving.
LARGE FRUITED MONTHLY (RIVERS'), 1st size, 1st quality, roundish, bright red, rich, and excellent, bearing in succession from August to November, canes strong, spreading with many branches.
MARQUIS OF DOUGLAS, 1st size, 1st quality, roundish, conical, bright purplish red, very rich, and exceedingly high flavoured, is very productive, bearing for some time in succession, early, ripening with Red Antwerp, canes strong, rather erect, branching, yellowish brown, with strong thickly set bristles.
TAYLOR'S PARAGON, 2nd size 2nd quality.

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VICTORIA (RODGERS'), 2nd size, 1st quality, conical, bright red. Very rich and excellent, bearing in succession till November, in favourable seasons, canes smooth, reddish brown, and rather erect.

WHITE GLOBE, 2nd size, 1st quality, roundish, and nearly white. Is very prolific, bearing its fruit in large clusters, canes strong, with thickly-set bristles, but of a dwarf habit, and need no stakes; very distinct.

——— MONARCH, 1st size, 1st quality, roundish, conical, pale yellow. Rich and high flavoured, canes strong, with many branches, bearing for some time in succession.

YELLOW, FRENCH, 1st size, 1st quality, conical, nearly yellow. Exceedingly rich and high flavoured, canes strong and branching, with many bristles, very productive, and bears in succession.

STRAWBERRIES.

Alpine Sorts. Those not priced, from 3/6 to 5/ per 100.

RED ALPINE, fruit red, long conical in form, very sweet. Continues bearing from June till November, and a very fine autumnal crop may be secured by cutting off all the spring blossoms.
SYN.—*Red Monthly Strawberry, Des Alpes à Fruit Ronge.*

WHITE ALPINE, fruit white, conical. Similar to the Red Alpine, except in colour.
SYN.—*White Monthly, Des Alpes à Fruit Blanc.*

Black Varieties.

DOWNTON, 1st size, 1st quality, ovate, dark purplish red. Very rich flavoured, late, flesh firm, rich, and aromatic. Beginning and middle of July.
SYN.—*Knight's Seedling, Knight's Strawberry, Knight's No. 7.*

OLD BLACK, 2nd size, 2nd quality, conical. Beginning of July.
SYN.—*Black, Black Canterbury, Black Pine, Turkey Pine, Black Beacon, Mulberry.*

BOSTOCK, 1st size, 2nd quality, roundish, dark red next the sun, light scarlet where shaded, pulp pale scarlet. The most productive of all strawberries.
SYN.—*Bostock, Bostock Seedling, Bostock Pine, Wellington, Bryam, Caledonian New Scarlet.*

Chili Varieties.

PRINCESS ROYAL, 1st size, 3rd quality. Medium size, very prolific.

CHILI, 1st size, 3rd quality, ovate, dull red. Of a rather indifferent sweet flavour, ripens late.
SYN.—*Patagonian, Greenwell's New Giant, Greenwell's French.*

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Strawberries.

Pine Varieties.

BLACK PRINCE, 2nd size, 2nd quality, roundish. Shy bearer. End of June.
SYN.—*Wilmot's Black Imperial.* 7/6 ℔ 100.
BLACK PRINCE. New and fine. 2/ ℔ dozen.
BLACK'S SEEDLING.
BRITISH QUEEN, 1st size, 1st quality, roundish. Fruit very large, rich scarlet colour, flavour rich and excellent, ripens early. 7/6 ℔ 100.
COMPTE DE PARIS. Large and fine, a shy bearer. 7/6 ℔ 100.
CREMONT. New and very fine. 3/ each.
DEVONSHIRE IMPROVED.
ELIZA, MYATT'S, 2nd size, 2nd quality, ovate. A new sort, fruit large and handsome. Middle of June. 10/6 ℔ 100.
ELTON PINE. A very delicious and very late Strawberry, ripening sometimes after most varieties have passed by.
SYN.—*Elton Seedling.*
HOVEY'S SEEDLING, 2nd size, 1st quality, conical or roundish oval. Flesh firm, with a rich agreeable flavour, colour deep shining scarlet, ripens about the medium season.
KEEN'S IMPERIAL, 1st size, 2nd quality, roundish. End of June. Tender and a shy bearer.
——— SEEDLING, 1st size, 1st quality, roundish. Dark purplish scarlet, flesh firm, with a rich and high flavour.
SYN.—*Keen's Black Pine, Murphy's Child, Keen's New Pine.*
KITLEY'S GOLIATH, 1st size, 1st quality. New and excellent, larger than the British Queen. 2/ ℔ dozen.
KNEVETT'S PINE, 1st size, 1st quality. Late and good.
MYATT'S DEPTFORD PINE. A new English variety, very hardy, flesh firm and solid, with a rich and excellent flavour, ripens at the medium season, and very productive.
PRINCE ALBERT, 1st size, ovate, rich scarlet, flesh soft, not high flavoured. An English variety, very large, and a good bearer. 7/6 ℔ 100
PRINCESS ALICE MAUD, 1st size, 1st quality. Very early. 7/6 ℔ 100.
QUEEN VICTORIA. Very large and high flavoured. 7/6 ℔ 100.
ROYAL PINE, 1st size, 1st quality. Very excellent variety, and a very prolific bearer.
STIRLING CASTLE. New and fine. 3/ ℔ dozen.
SWAINSTONE'S SEEDLING, 1st size, 1st quality, ovate. Bears abundantly, sometimes a second crop in autumn. End of June.
TRAILL'S STRAWBERRY. An Improved variety of Keen's seedling. 10/6 ℔ 100.
TURNER'S LATE PINE, 1st size, 2nd quality, ovate. End of July. Very late variety.
THOM'S SEEDLING. New and fine. 7/6 ℔ 100.
WILMOT'S SUPERB, 1st size, 2nd quality, roundish, pale scarlet. Very large.

Scarlet Varieties.

ABERDEEN GOOSEBERRY. Flesh firm, of tolerably good flavour, ripens gradually in succession.
SYN.—*Scotch Scarlet, Roseberry.*
AMERICAN SCARLET, 2nd size, 1st quality, conical. Fruit rich and sweet, comes in late. Beginning or middle of July.
SYN.—*Black American, New American Scarlet, New Roseberry, Thomson's Roseberry.*

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Strawberries.

BEEHIVE, a prolific and early variety of the Groves-End Scarlet.

BLACK FRUITED ROSEBERRY, 1st size, 2nd quality, roundish. Of a fine dark shining colour, a good bearer. End of June and beginning of July.

COUL LATE SCARLET, 1st size, 1st quality, ovate. An excellent late sort, a good bearer. Beginning or middle of July.

SYN.—*Sir George Mackenzie's Late Scarlet.*

GROVE-END SCARLET, 1st size, 2nd quality, globular and flattened. Fruit of a medium size, very bright vermilion, flesh of a pleasant mild flavour. Middle to end of July.

SYN.—*Atkinson's Scarlet.*

KNIGHT'S LARGE SCARLET, 1st size, 2nd quality, roundish. Moderate bearer. End of June.

SYN.—*Knight's Scarlet, American Scarlet, Hairy-Leaved Scarlet, Large Scarlet.*

Hautbois Varieties.

COMMON HAUTBOIS, 2nd size, 2nd quality, roundish, or ovate. Fruit pale at first, dull purplish at maturity. End of June and beginning of July.

MYATT'S NEW HAUTBOIS, 1st size, 1st quality. Very prolific and excellent.

QUINCES.

From 1/6 to 3/ each.

Quinces.

COMMON or APPLE-SHAPED QUINCE. The sort most generally cultivated in British gardens; fruit large and roundish, of a fine golden colour, and has an excellent flavour.

SYN.—*Coignassier Maliforme.*

PEAR-SHAPED QUINCE. Fruit medium sized, pyriform, yellow, not so bright in the colour as the former, neither is it so good, being much drier and harder in the flesh.

SYN.—*Coignassier Pyriforme.*

PORTUGAL QUINCE. Fruit large oblong, paler in colour than either of the former, and the flesh not so harsh, much esteemed for stewing and baking, as it changes to a fine purple when dressed.

SYN.—*Coignassier de Portugal.*

MEDLARS.

From 1/6 to 3/ each.

Medlars.

There are but few varieties of Medlars which are worthy of cultivation as fruit trees. The three following sorts comprehend the most useful:—

DUTCH MEDLAR. Fruit large and oblate.

DUTCH LARGE, or MONSTROUS. Fruit very large.

NOTTINGHAM. Fruit middle-sized, obovate. This is the finest variety, and most worthy of cultivation, being sharper and higher flavoured than the others.

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MULBERRIES.

Mulberries.

The Mulberry is a hardy deciduous tree, the fruit ripening in July and August. The red and black varieties are considered the best.

RED MULBERRY (MORUS RUBRA). Fruit about an inch long, forms a large ornamental tree.

JOHNSON'S MULBERRY. A variety of the Red, fruit very large, oblong cylindric, blackish colour, sub-acid, and of a mild agreeable flavour, grows strong, leaves uncommonly large.

BLACK MULBERRY (MORUS NIGRA). Fruit larger and finer than that of the Red, being an inch and a half long, and one inch in diameter, black, and of delicious flavour.

WHITE MULBERRY (MORUS ALBA). Fruit of little or no value, commonly grown as an ornamental tree, or for its leaves to feed the silk worm.

CRANBERRIES.

Cranberries.

The Cranberry is a low trailing shrub, growing wild in the northern portions of both hemispheres, and producing a round red acid fruit, which is valuable for tarts, preserves, and other culinary uses. The American variety is the finest, and may be easily cultivated in beds of sandy peat soil, prepared in any moist situation, and if a third of thoroughly decayed manure be added to the peat, the berries will be much larger and of a more agreeable flavour than in their wild state. A piece of ground, twenty feet square, prepared in this way, will yield annually a large supply of fruit.

OXYCOCCUS PALUSTRIS. The European Cranberry.
———— MACROCARPA. The American Cranberry.

BERBERRIES.

Berberries.

From 4/ to 9/ per dozen.

These are chiefly used for pickles when green, and preserves in the ripe state; they bear abundantly, and the bushes require little care except to keep them from getting too thick and bushy.

BERBERIS ALBA. (White Fruited).
———— ASPERMA. (Stoneless, or Maiden).
———— LUTEA. (Yellow Fruited).
———— NIGRA. (Black Fruited).
———— VIOLACEA. (Purple Fruited).
———— VULGARIS. (Common Red).
———— DULCIS. (Sweet Fruited). An evergreen bush, the flowers large, golden yellow; the berries black, about the size of a Black Currant, may be used when green for making pies or tarts, and when ripe for preserves, which are most excellent.

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SERVICE.

From 1/6 to 2/6 each.

Service.

A highly ornamental tree, producing fruit in abundance, even in very exposed situations and poor soils; the berries should be gathered and allowed to lie for some time in the fruit room before they are used. The following are the principal varieties :—

SORBUS ARIA (White Beam).
——— VESTITA (Hoary Beam, or Nepal Service.)
——— PYRIFORMIS (Pear Shaped).
SORBUS DOMESTICA (True Service, or Large Fruited).
——— MALIFORMIS (Apple Shaped).

GRAPES, OR VINES.

In Pots, 3/6 to 5/6 each.

Grapes, or Vines.

Black, or Blue Fruited.

ALICANT. Bunches long, berries medium size, oval, requires a Vinery.
Syn.—*Black Portugal, Teinturier, Black Spanish.*

BLACK CORINTH. Bunches short and small, berries about the size of a pea, juice sweet; imported under the name of Currants.
Syn.—*Black Ascalon, Raisin de Corinth, Zante Currant.*

——— DAMASCUS. Bunches medium size, berries large, globular, without stones, juice exquisite; requires the hottest part of the Vinery.
Syn.—*Works of Manor Grape.*

——— FRONTIGNAN. Bunches rather small, berries small and round, juice rich and vinous.
Syn.—*Blue, or Violet Frontignac, Muscat Noir.*

———HAMBURG. Bunches pretty large, with shoulders, berries large oval, juice sugary; an abundant bearer and most extensively cultivated.
Syn.—*Warner's Black; Purple, Red, Brown, and Dutch Hamburgh; Hampton Court, Gibraltar, Victoria, Admiral Troller, Frankendale, Valentines.*

——— LOMBARDY. Bunches long, with large shoulders, berries large, round, juice sweet, flavour excellent.
Syn.—*West St. Peter's, Raisin des Carmes, Poonah.*

——— PRINCE. Bunches long, berries oval, large, flavour fine, bears freely.
Syn.—*Cambridge Botanic Garden.*

——— MOROCCO. Bunches medium, berries large, flavour very fine.
Syn.—*Ansley's Large Oval Black, Rhodes, Raisin D'Espagne.*

Grizzly or Red Fruited.

GRIZZLY FRONTIGNAN. Bunches small, without shoulders, berries medium, flavour excellent when the berries begin to shrivel.
Syn.—*Muscat Gris.*

LOMBARDY. Bunches and berries very large, a free bearer and hangs long on the tree.
Syn. *Flame Coloured Tokay, Red Rhenish.*

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Grapes, or Vines

RED MUSCAT OF ALEXANDRIA. Bunches large, berries oval, large, juicy, and fine flavoured.
SYN.—*Red Frontignac of Jerusalem.*

RED HAMBURG. The size of the bush and berries resembling Black Hamburg; the berries of this are sometimes brown, and are very rich flavoured.

White or Yellow Fruited.

MALMSEY MUSCADINE. Bunches large, berries round and very sweet, one of the richest of musked grapes.
SYN.—*Parsley-Leaved Coitat.*

ROYAL MUSCADINE. Bunches large, with shoulders, berries medium, round, juice rich and vinous.
SYN.—*D'Arboyce Chasselas Blanc, Chasselas Dore.*

WHITE FRONTIGNAN. Bunches and berries medium size, one of the highest flavoured grapes.
SYN.—*Muscat Blanc.*

MUSCAT OF ALEXANDRIA. Bunches large, shouldered; berries, large, oval; one of the very best, but requires a high temperature.
SYN.—*Frontigniac of Alexandria, Jerusalem Muscat, Passe-Congue Musque, Malaga, Tottenham Park Muscat, Canon Hall Muscat.*

WHITE SWEET-WATER. Bunches and berries medium size, a very good variety.
SYN.—*Dutch Sweet-Water, Stillward's.*

WHITE NICE. Bunches very large, berries medium, bears carriage well, and hangs long on the tree. The bunches of this variety are often produced from fifteen to twenty pounds.

GUAVA.

Guava.

IN POTS, 3/6 to 7/6 each.

Natives of the two Indies and Brazil; several of the species bear pulpy fruit of excellent quality, which, with sugar, makes very cooling and excellent preserves; they bear when planted in the Camellia House or Conservatory. The following are the best sorts:—

APPLE FRUITED (Psidium pomiferum.)
PEAR FRUITED (——— pyriferum).
CATTLEY'S (——— Cattleyanum).

ORANGES AND CITRONS.

Oranges and Citrons.

IN POTS, 4/ to 21/ each.

These may be fruited in the Camellia House, but well deserve a house specially for the purpose; there are many varieties in cultivation. The following are distinct:—

COMMON ORANGE (Citrus Aurantium).
HORNED SOUR.
ROYAL SOUR.
CROWN SOUR.
GREEN SOUR.
SEVILLE ORANGE (Citrus vulgaris).
MANDARIN ORANGE (Nobilis).
OTAHEITI.
CITRON TREE (Citrus Medica).
SHADDOCK (Citrus decumana).

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PINE APPLES.

ANSON'S. Leaves slender, erect; fruit bright lemon; flesh pale yellow, sweet.
SYN.—*Lemon Antigua, Anson's Queen.*

ANTIGUA QUEEN. Leaves brown mealy; fruit oval; flesh deep yellow, high flavoured.

———— BLACK. Leaves long, narrow, mealy; fruit oval, orange colour; flesh pale yellow, juicy, fine.
SYN.—*Brown Antigua, Wortley's West Indian.*

———— GREEN. Leaves long, narrow, brittle; fruit globular; flesh pale yellow, juicy, and fine.
SYN.—*Green Havannah.*

BLACK SUGAR LOAF. Leaves broad, strong; fruit large, brownish; flesh whitish.
SYN.—*Copper Coloured, Barbadoes.*

BROWN SUGAR LOAF. Leaves strong, short; fruit large and fine, excellent for winter use.

CAYENNE. Fruit medium size, flavour excellent.

ENVILLE. Leaves broad, strong, and mealy; fruit pyramidal, large; flesh whitish, a highly esteemed sort.
SYN.—*Enville Sugar Loaf, Cockscomb.*

GLOBE. Leaves very erect, narrow; fruit globular, dark yellow; flesh yellow, rich, and juicy.
SYN.—*English Globe.*

GREEN PROVIDENCE. Leaves large and broad; fruit somewhat obovate; flesh pale yellow and sweet.
SYN.—*Wollarton Providence, Royal Providence.*

HAVANNAH. Leaves narrow, dotted with brown; fruit globular, large; flesh pale yellow, flavour very fine.
SYN.—*Smooth Antigua, Brown Havannah.*

JAMAICA BLACK. Leaves long, mealy; fruit large, oval, brownish yellow; flesh deep yellow, flavour very fine. A highly esteemed sort.
SYN.— *Black Barbadoes, Jamaica.*

———— NEW. Leaves long, spreading pale brown; fruit pyramidal, blackish; flesh yellow, somewhat acid, but pleasant.
SYN.—*St. Kitt's, St. Vincent.*

LEMON QUEEN. Leaves broad, short, grooved; fruit oval, lemon coloured, large.
SYN.—*English Globe.*

MONTSERRAT. Leaves long, glossy green; fruit cylindrical large; flesh lemon coloured, solid, and juicy.
SYN.—*Cape Coast, Red Ripley, Cochineal, Bogwarp.*

OTAHEITI. Leaves long, erect, narrow; fruit oval, deep yellow; flesh pale yellow, flavour good.

PROVIDENCE WHITE. Leaves large, broad, and spreading; fruit perhaps the largest in cultivation, flavour medium.

QUEEN. Leaves short, broad and strong; fruit cylindrical, medium size, deep yellow; flesh juicy, flavour excellent. A very highly esteemed sort.

———— RIPLEY'S. A distinct variety of the preceding, and equally fine.

RUSSIAN GLOBE. Leaves short, broad; fruit globular, orange; flesh yellow, very sweet.

TRINIDAD. Leaves long and straggling; fruit long and large; flesh pale yellow, flavour medium.
SYN.—*Pitch Lake Pine.*

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Pot Herbs.

POT HERBS.

		s.	d.
ANGELICA	℔ doz.	9	0
ARTICHOKE, GLOBE	..	9	0
——— JERUSALEM	bush.	7	6
——— sorts	doz.	3	0
ASPARAGUS, 1 year	100.	1	6
——— 2 years	—	3	6
——— 3 years	℔ 100, 7/6 to	10	6
BALM	doz.	3	0
——— OF GILEAD	—	6	0
BASIL. Seed sown in March	oz.	1	0
BORAGE. Seed sown in March	—	0	9
BURNET	doz.	3	0
CAPSICUM. Seed sown in March	oz.	2	0
CARAWAY. Seed sown in March	—	0	2
CARDOON. Seed sown in April	—	0	9
CHAMOMILE, SINGLE	doz.	3	0
——— DOUBLE	—	4	0
CHERVIL. Seed sown in March, April, and May	oz.	3	6
CHIVES	clump.	0	6
CLARY. Seed sown in April	oz.	1	0
CORIANDER. Seed sown in April	—	0	1
CORN SALAD. Seed sown in August	—	0	4
CRESS. Seed sown monthly	—	0	2
ELECAMPANE	doz.	6	0
FENNEL, COMMON	—	3	0
——— FINOCHIO	—	4	0
FEVERFEW	—	3	0
GARLIC	pound	1	0
HOREHOUND	doz.	3	0
HORSE RADISH	100.	7	6
HYSSOP	doz.	4	0
LAVENDER	℔ dozen. 4/ to	6	0
LOVAGE	doz.	9	0
LOVE APPLE. Seed sown in March,	oz.	1	0
MUSTARD. Seed sown monthly.	—	0	2
MARJORAM, POT. Seed sown in March	—	1	0
MARJORAM, SWEET. Seed sown in March	℔ oz.	1	0
MINT, SPEAR	doz.	3	0
——— PEPPER	—	3	0
PENNYROYAL	—	4	0
PURSLANE, GREEN. Seed sown in April	oz.	1	0
——— GOLDEN. Seed sown in April.	—	1	0
RAMPION	doz.	4	0
RHUBARB, EARLY RED	—	6	0
——— GIANT	—	6	0
——— GOLIATH	each.	1	6
——— LINNÆUS	—	1	6
——— PRINCE ALBERT	—	2	0
——— VICTORIA, True	doz. 9/	12	0
——— OLDER SORTS	doz.	6	0
ROCAMBOLE	clump.	0	6
ROSEMARY	doz.	6	0
RUE	—	4	0
SAGE	—	3	0
SAVORY, SUMMER. Seed sown in April	oz.	0	6
——— WINTER. Seed sown in April	—	0	6
SEA KALE, 1 year	100.	5	0
2 years	—	7	6
3 years	—	10	6
SHALLOTS	pound.	1	0
SORREL, COMMON	doz.	3	0
——— FRENCH	—	4	0
TANSY, COMMON	—	3	0
——— CURLED	—	4	0
TOMATOS	—	3	0
THYME, COMMON	—	4	0
——— LEMON	—	6	0
——— VARIEGATED	—	6	0
WORMWOOD	—	3	0

MUSHROOM SPAWN, warranted .... 7/6 per bushel.

The following, in constant supply, fine strong plants, fit for transplanting in their season:—CELERY, sorts; CABBAGE, sorts; GERMAN GREENS, sorts; SAVOYS, sorts; BROCOLI, sorts; CAULIFLOWER, sorts; LEEKS, sorts; LETTUCE, sorts.

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LIST OF SYNONYMS.

FOR

FACILITATING REFERENCE TO THE FOREGOING LISTS.

APPLES.

Synonyms.

Apples.

American Pearmain, *see*	Pearmain Autumn
American Summer Pearmain	Pearmain Summer
Arbroath Pippin	Oslin
Aromatic Russet	Spice Apple
Arundel Pearmain	Pearmian Hormead
Avant Tout	Summer Stibbert
Belle Fille	Reinette Grise
Beauty of England	Belle Anglaise
Black Crab	Borsdorffer, Black
Blenheim Orange	Blenheim Pippin
Bonne Rouge	Hollandburgh
Brandy Apple	Golden Harvey
Burntisland Pippin	Spice Apple
Caldwell	Rymer
Cambridge Pippin	Bedfordshire Foundling
Chalmers' Large	Codlin, Dutch
Cat's Head Beaufin	Beaufin, Norfolk
Clifton Nonsuch	Fearn's Pippin
Coat's Yorkshire Goose Sauce	Yorkshire Greening
Cobbett's Fall Pippin	Reinette Blanche
Compote	Padley's Pippin
Cornish July Flower	Gilliflower, Cornish
Dainty	Hoary Morning
Dumelow's Seedling	Duke of Wellington
D'Espagne	Reinette Blanche
Dilton Nonpariel	Nonpareil, Braddick's
Downton Pippin	Elton Pippin
Dredge's White Lily	Buckland Devonshire
Early Calville	Calville D'Ete
Early Red Margaret	Juneating Red
—— Strawberry	Strawberry, Summer
—— Sweet Bough	Yellow Bough
—— White Crofton	Crofton, White
Edmonstone's Aromatic Pippin	Kerry Pippin
Emperor Alexander	Alexander
English Codlin, *see*	Codlin, Old English
English Nonpareil	Nonpareil, Old
Eve Apple	Juneating Red
Fair Maid of Taunton	Taunton Fairmaid
Five-Crown Pippin	London Pippin
Formosa Pippin	Ribston Pippin
French Crab	Easter Pippin
Fry's Pippin	Court of Wick
Garnon's Apple	Court-Pendu Plat
Garret Pippin	Borsdorffer
Girkin Pippin	Wyken Pippin
Glammis Castle	Tower of Glammis
Glory of York	Ribston Pippin
Green Codlin	Leadington Monstrous
Green Cossings	Rymer
Grosse Pomme Noire D'Amerique	Violette Pomme
Hampshire Yellow	King of the Pippins
Hative	Summer Stibbart
Hick's Fancy	Nonpareil Early
Hormead Pippin	Pearmain, Hormead
Hunt's Nonpareil	Nonpareil, Old
Irish Codlin	Codlin Manks
—— Crofton	Crofton Pippin
—— Pitcher	Codlin, Manks
—— Russet	Sam Young
Juneating Golden Beauty	Juneating, White
King George	Borsdorffer
Kirke's Scarlet Admiral	Hollandburgh
Knight's Codlin	Wormsly Pippin
Lady Apple	Api-Rose
Lady de Gray	Kentish Fillbasket
Lady's Finger	Paradise Pippin
Large Early	Early Harvest
Large White Calville	Calville Blanc

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Synonyms.

Apples.

Large Yellow .. *see*	Bough Autumn
La Surprise	Surprise
Late Carse of Gowrie	Tower of Glammis
Late Fulwood	Fulwood, Dutch
Leathercoat	Russet Royal
Lord Gwydyr's Newton Pippin	Alfrieston
Megginch Favourite	Reinette, Golden
Monstrous Pippin ..	Gloria Mundi
Monstrous Reinette	Reinette, Striped Monstrous
Motteaux's Seedling	Beachamwell
Munch's Pippin	Margil
Never Fail	Margil
New Golden Pippin	Golden Pippin, Kirke's
New Nonpareil	Nonpareil, Early
Newton Pippin	Alfrieston
Norfolk Biffin.....	Beaufin, Norfolk
Norfolk Coleman....	Winter Colman
Norfolk Pippin	Pearmain, Adam's
——— Storing'	Winter Colman
Normanton Wonder	Duke of Wellington
Nutmeg Pippin	Cockle Pippin
Old Pearmain	Pearmain, Herefordshire
Orange Pippin	Isle of Wight Pippin
Ortley	Woolman's Long
Paradise, White	Paradise Pippin
Passe Pomme du Canada.....	Russet, Royal
Peach Apple	Irish Peach
Pie Apple	Holland Pippin
Pomme Grisi	Grise
Pomme D'Astrachan	Astrachan White
Portugal Russet....	Reinette du Canada
Potter's Large	Kentish Fillbasket
Prince William	William the Fourth
Queen of the Reinettes	Reine des Reinettes
Rambour Franc	Rambour D'Ete
Ramsay's Seedling..	Isabella
Read's Baker	Beaufin, Norfolk
Red Baldwin	Baldwin
Red Calville	Calville Rouge
Reinette D'Holland	Holland Pippin
——— Doree	Dutch Mignonne
——— du Canada Plate....	Russet, Royal
——— Rouge	Pearmain, Barcelona
Roxburgh Russet ..	Russet, Boston
Royal D'Angleterre	Pearmain, Herefordshire
Royal Pearmain	Pearmain, Autumn
Russian Emperor ..	Alexander
Sack Apple .... *see*	Quarrenden
Sabine of the Fleming's.....	Gravenstein
Scarlet Perfume	Cole
—— Golden Pippin..	Golden Pippin, Screveton
——— Queening....	Queening, Crimson
Seacliffe Apple	Hawthornden, Seacliffe
Sir Walter Blacket's Favourite	Edinburgh Cluster
Sam Rawling's	Hoary Morning
Speckled Golden Reinette	Pearmain, Barcelona
Stetting Rouge	Rostocker
St. Helena Russet ..	Reinette du Canada
Striped Juneating ..	Juneating Red
——— Quarrenden..	Juneating Red
Sudlow's Fall Pippin	Golden Pippin, Franklin's
Summer Calville	Calville D'Ete
——— Crofton	Crofton, White
——— Julian	St. Julian D'Ete
——— Pippin	Margaret Miller
——— Queening ..	Queening Crimson
——— Rambour ..	Rambour D'Ete
Syke House	Russet Syke House
Taunton	Pomeroy
Transparent Muscovie	Astrachan White
Traver's Pippin	Ribston Pippin
Twenty Ounce.....	De XVIII. Ounce
Violette de Quartre Gouts	Violette Pomme
Walmer Court.....	Northern Greening
Warwickshire Pippin	Wyken Pippin
Watch Apple	Cambusnethan Pippin
Watson's New Nonsuch	Thorle, Summer
White Cockle Pippin	Cockle Pippin
White Codlin	Codlin, Keswick.
———Calville.....	Calville Blanc
———Oslin	Oslin
Whorle Pippin	Thorle, Summer
Winter Calville	Calville Rouge
——— Redstreak ..	Cambusnethan Pippin
——— Strawberry..	Strawberry Winter
Wollarton Pippin ..	Court Pendu Plat
Wood Pecker	Baldwin
Wood's Huntingdon	Court of Wick
Woodstock Pippin ..	Blenheim Pippin
Yellow German Reinette	Reinette, Golden
Yellow Harvest	Early Harvest
Zealande	Astrachan White

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PEARS.

	Synonyms.
Ah Mon Dieux, *see*	D'Amour
Alberty	Albertine
Alexander of Russia	Gros Dillon
Amire Joannet	Archduc D'Ete
Amiral Musque	Amiral, Van Mons
Angleterre des Chartreaux	Angleterre Noisette
Arbre Courbe	Amiral, Van Mons
Winter Jargonelle	Cuise Madame D'Hiver
Badham's Isambert	Beurre Brown
Bartlett	Bon Chretien, William's
Beau Presant	Grosse Jargonelle
Beauchamp's	Bergamotte Cadette
Bein Armudi	Bezi De La Motte
Bell Pear	Catillac
Belle Apres Noel	Beurre Apres Noel
—— de Brissic	——Brissic
—— de Jersey	Saint Germain, Uvedale's
—— de Noel	Beurre Apres Noel
—— Lucrative	Fondante D'Automne
—— Noisette	Bellissime D'Hiver
Bellissime Jargonelle	Jargonelle, French
——— D'Ete	Ditto do.
——— Supreme	Ditto do.
Benoist	Beurre D'Benoist
Bergamotte D'Fougerre	Bergamotte D'Hollande
———D'Angleterre	——— Hampden's
——— French	——— D'Automne
———de la Pentacotte	Beurre Easter
Beurre Auguste Benoist	Beurre D'Benoist
——— Aurora	——— de Capiaumont
——— Beauchamps	Bergamotte Cadette
——— Blanc Jersey	Bezi de la Motte
——— Bronje	Beurre Bronze
——— Colmar D'Automne	——— Colmar, Van Mons
——— Curtes	Compte de Lamy
——— D'Alencon	Bergamotte D'Hollande
Beurre D'Alencon, *see*	Beurre Colmar, Van Mons
——— D'Angleterre,	Angleterre Noisette
——— D'Amaulis	Beurre D'Amalis
——— D'Argenson	Colmar Passe
——— D'Epine	Beurre de Ranz
——— D'Hiver	Chaumontel
——— D'Hiver Nouvelle	Glout Morceau
——— de Austraisie	Jaminette
——— de Beaumont	Beurre Biemont
——— de Malines	Nelis Winter
——— de Paques	Beurre Easter
——— de Paris	Gros Jargonelle
——— de Payennce	Calebasse
——— de Seymour	Mansuette
——— Du Roi	Beurre Brown
——— Incomparable	——— Diel
——— Neill	Neill, Van Mons
——— Rance	Ditto do.
——— Roupe	Beurre Easter
Bezi Chaumontelle	——— Easter
—— Royal	Bezi D'Heri
—— de Chaumontel	Chaumontel
Black Bess of Castle Menzies	Achan Black
Bon Chretien Turc	Bon Chretien Flemish
——— Nouvelle	Ditto do.
——— D'Espagne	Bon Chretien Spanish
——— D'Auch	——— Winter
——— D'Hiver	Ditto do.
Bonne de Soulers	Bergamotte de Souler's
—— Rouge	Bergamotte, Gansel's
—— Louise D'Araudore	Louise Bonne of Jersey
—— de Malines	Nelis Winter
—— Ente	Bonne Ante
Bosc's Flaschenbirne	Beurre Bosc
Bouche Nouvelle	Flemish Beauty
Braddick's Field Standard	Marie Louise
Brilliant	Flemish Beauty
Brocca's Bergamotte	Bergamotte, Gansel's
Burnt Cat	Chat-Brule
Caillet Rosat D'Ete	Summer Rose

Pears.

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Synonyms.

Pears.

Calebasse Bosc	*see* Beurre Bosc
——— Vass	——— de Capiaumont
——— D'Hollande	Calebasse
——— Double Extra	Ditto
Chalmers' Large	St. German, Uvedale's
Chambrette	Virgouleuse
Capiaumont	Beurre de Capiaumont
Chapman's Souveraine	Colmar Passe
Charles D'Autriche	Charles of Austria
Charnock	Drummond
Chaumentelle tres Grosse	Beurre Easter
Colmar Dore	Colmar
——— D'Hiver	Glout Morceau
——— Jaminette	Jaminette
——— Epineux	Colmar Passe
Comptesse de Trenoi	Figue de Naples
D'Abondance	D'Amour
D'Ananas	Colmar Passe
D'Auch	Colmar
D'Austraisie	Jaminette
De Bordeux	Bezi D'Heri
De Cadette	Bergamotte Cadette
De Manne	Colmar
De Rose	Summer Rose
De Tonneau	Saint German, Uvedale's
De Vigne Palone	Figue de Naples
Des Vallee	Vallee Franche
Deans	Doyenne White
Deschamps	Beurre D'Aremberg
Diel's Butterbirne	——— Diel
Dillen	——— Diel
Dingler	Compte De Lamy
Dorothee Royale	Beurre Diel
Downham Pippin	Incomparable, Hacon's
Doyenne	Doyenne White
——— Blanc	——— White
——— D'Automne	——— Grey
——— Defais	——— D'Effay
——— du Printemps	Beurre Easter
——— Galeaux	Doyenne Grey
——— Gris	Ditto
Drapiez D'Ete	Drapiez
Duc de Aremberg	Beurre D'Aremberg
Dumas	Vicar of Winkfield
Early Bergamotte	Bergamotte D'Ete
—— Queen	Muscat Robert
—— Beurre	Ambrosia
Ellanrioch	Bergamotte, Hampden's
English Beurre	*see* Angleterre Noisette
——— Bergamotte	Bergamotte Autumn
Epargne	Jargonelle, English
Epine Rose	Summer Rose
Etourneau	Nelis Winter
Fingal's	Bergamotte, Hampden's
Forellen-birne	Forelle
Forme de Marie Louise	Marie Louise
Franc Real D'Ete	Franc Real Summer
Franzosische Kumelbirne	Bezi D'Heri
Frederic de Prusse	Frederick of Prussia
Frederich von Preussen	Ditto do.
German Baker	Saint German, Uvedale's
Golden Beurre	Beurre Brown
Gracieuse	Belle et Bonne
Grand Monarque	Catillac
Grey Deans	Doyenne Gray
Green Sugar	Sucree Verte
——— Yare	Green Pear of Yair
——— Pear	Chisel
Grey Achan	Achan Black
Groot Mogul	Catillac
Grosse Calebasse	Calebasse Grosse, Van Mons
——— Dorothee	Beurre Diel
Gurle's Beurre	Bergamotte, Gansel's
Hardenpont du Printemps	Jaminette (of some) or Beurre de Ranz
Harvest Pear	Archduc D'Ete
Hazel	Hessel
Henri Quatre	Henry the Fourth
Holland Bergamotte	Bergamotte D'Holland
Incomparable	Colmar
Imperatrice de France	Flemish Beauty
Isambert	Beurre Brown
Ive's Bergamotte	Bergamotte, Gansel's
Jackman's Melting	King Edward
Jacquin	Henry the Fourth
John	Messire Jean
Katzenkopf	Catillac
King	Caillot Rosat, English
Knevett's	Figue
——— New Swan's Egg	Moor Fowl Egg
Knights Nouvelle	Knight's D'Hiver
——— Seedling	——— Monarch
L'Orpoline	Beurre D'Aremberg
La Belle de Flanders	Flemish Beauty
La Fortune De Paris	La Fortunee

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Synonyms.

Pears.

La Fortune De Parmentier	*see* La Fortunee
La Bonne Malinoise	Nelis Winter
Langeliers Beurre	Beurre Langelier
Lammas Pear	Crawford (of Scotland)
Late Van Mons	Knight's D'Hiver
Lent Saint German	St Germain, Uvedale's
Leon le Clerc de la Val	Leon le Clerc, Van Mons
Linden D'Automne	Glout Morceau
Little Swan's Egg	Moor-fowl Egg
Long Green	Verte Longue
Lord Cheeney's	Bergamotte D'Hollande
Louise Avranches	Louise Bonne of Jersey
Madeleine	Citron des Carmes
Magdalene	Ditto do.
Marie Chretienne	Marie Louise
Marie Louise the Second	Compte de Lamy
Marie Louise, Nova	Ditto do.
Marianne Nouvelle	Beurre Bosc
Medaille	Beurre Napoleon
Milanaise Cuvelier	Nelis Winter
Messire Jean Dore	Ditto.
Messire Jean Blanc	Messire Jean
Monsieur John	Ditto.
Monstrouse Calebasse	Calebasse Grosse, Van Mons
Musk Robine	Muscat, Robert
Napoleon	Beurre Napoleon
Ne plus Meuris	Beurre D'Anjou
Nelis D'Hiver	Nelis Winter
New York Red Cheek	Seckle
Oxford Chaumontel	Chaumontel
Passe Colmar Dore	Colmar Passe Dore
Passe Colmar Gris	Colmar Passe
Passe Colmar Musquee	Colmar Passe Musque
Pickering Pear	Saint Germain, Uvedale's
Pine Pear	Doyenne, White
Pistolette	Figue
Poire á Goubert	Gilogile
Poire a la Reine	Muscat, Robert
Poire Truite	Forelle
Poire des Tables des Princes	Jargonelle, English
Poire Glace	Virgouleuse
Poire Neill	Neill, Van Mons
Pomoise	Pomme Poire
Princess de Parme	Marie Louise
Queen of the Belgians	*see* Reine des Belges
Queen of Winter	Reine D'Hiver
Ranz	Beurre De Ranze
Red Achan	Achan Black
Real Jargonelle	Jargonelle, English
Red Doyenne	Doyenne Grey
Red Cheeked Seckel	Seckle
Red Muscadel	Jargonelle, French
Robert's Keeping	Bergamotte, Easter
Roi de Rome	Beurre Napoleon
Roi de Wurtemberg	Glout Morceau
Rouge	Windsor
Rose Angle, Early	Citron des Carmes
Rosenbirne	Summer Rose
Rousselet	Rousselet De Rheims
——— Petit	Ditto do.
Rousette D'Anjou	Bezi de Caisoy
Sabine D'Ete	Jargonelle, French
Saint Lambert	——— English
Saint Germain de Martin	Saint Germain D'Ete
Saint Germain Gris	Saint Germain
——— Jaune	Ditto
Scotch Bergamot	Bergamotte, Hampden's
——— Charnock	Drummond
Small Winter Beurre	Bezi de Caisoy
Snow Pear	Doyenne, White
Solitaire	Mansuette
Spence	Beurre Spence, Van Mons
Spina	Bon Chretien, Spanish
St. Michael Dore	Doyenne Grey
St. Jean Musque Gros	Muscat Robert
Striped Madeleine	Citron des Carmes Panache
Sugar Pear	Green Chisel
Summer Bell	Windsor
——— Bergamot	Bergamotte D'Ete
——— Saint Germain	Saint Germain D'Ete
——— Doyenne	Doyenne D'Ete
Sweet Summer	Jargonelle, English
Swiss Bergamot	Bergamotte Swiss
Teton de Venus	Belissime D'Hiver
True Jargonelle	Jargonelle, English
True Longueville	Bergamotte D'Automne
Uvedale's Warden	Saint Germain, Uvedale's
Verlaine	Glendesheim
Verlaine D'Ete	Ditto
Vicompte de Spoelberg	De Spoelberg
Vermilion D'Ete	Jargonelle, French

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Synonyms. Pears.

Warwick Bergamotte, *see*	Doyenne White
White Beurre	Ditto do.
White Autumn Beurre	Ditto do.
Wilding of Caisoy ..	Bezi de Caisoy
William the Fourth ..	Louise Bonne of Jersey
Winter Achan	Achan Black
William's Pear, *see*	Bon Chretien, William's
——— Bergamotte ..	Bergamotte, Easter
——— Poplin	Bezi de Caisoy
——— Jargonelle ..	Cuise Madame D'Hiver
York Bergamotte ..	Bergamotte, Autumn
Yutte	Yatt

CHERRIES.

Cherries.

Amber Heart, *see* ..	White Heart
Ambree de Choisy ..	Belle de Choisy
Anglaise	Royal Duke
——— Tardive ..	Late Duke
Ditto do.	Royal Duke
Ansell's Fine Black	Black Heart
Armstrong's Bigarreau	Bigarreau Hollande
Bigarreau Royal	Bigarreau
——— Gross	Ditto
——— Tardif ..	Ditto
——— Lauermaun	Bigarreau Napoleon
——— Blanc	——— White
——— Gros Monstreux ..	——— Gros Coeuret
——— D'Hollande ..	——— Holland
——— Gros Noir	Black Heart, Tradescaut's
Black Caroon Gean ..	Black Heart
—— Morello	Morello
—— Circassian	Tartarian Black
Buttner's Wachs-Knorpel Kirsche ..	Buttner's Yellow
Buttner's Gelbe, Knorpel Kirsche ..	Ditto do.
Cerise à Noyau Tendre	Belle de Choisy
Cerise à Boquet	Cluster
Cherry Duke	Jeffrey's Duke
Downer's	Downer's Late
Downer's Late Red ..	Ditto do.
Dredge's Early White Heart	White Heart
Dutch Morello	Morello
Early Black	Black Heart
Early Purple Guigne	Early Purple Griotte
Early Richmond	Kentish
Early Amber Heart	River's Early Amber
Elkhorn of Maryland, *see*	Black Heart, Tradescant's
Fraser's Black Heart	Tartarian Black
Graffion	Bigarreau
Griotte D'Allemagne	Griotte de Chaux
Gros Coeuret	Bigarreau Gros Coeuret
Guigne Noire Tardive	Black Heart, Tradescant's
Harrison Heart	Bigarreau White
Herefordshire, Black	Coronne
Italian Heart	Bigarreau
Jeffrey's Royal	Jeffrey's Duke
Knevet's Late Bigarreau	Florence
Large Heart-Shaped Bigarreau.....	Bigarreau
Large White Bigarreau	——— White
——— Black Gean ..	Coronne
——— May Duke ..	May Duke
Late Morello	Morello
Lauermann's Kirsche	Bigarreau, Napoleon
——— Grosse-Kirsche.....	Ditto do.
Montmorency	Kentish
Moriss' Duke	May Duke
Mottled Bigarreau ..	Manning's Mottled
Pie Cherry	Kentish
Portugal Duke	May Duke
Prussian Yellow	Jaune de Prusse
Queen Spa	Reine Spa
———Hortense	———Hortense
Ronald's Large Morello.....	Morello
Ronalds' Heart	Tartarian Black
Royale	Jeffrey's Duke
Royale Ordinaire ..	Ditto do.
Spanish Black Heart	Black Heart

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Spotted Bigarreau, *see*	Bigarreau, Holland
Tartarian	Tartarian, Black
Thompson's Duke	May Duke
Tradescant	Bigarreau, White
Tradescant's	Black Heart, Tradescant's
Tres Fertile *see*	Cluster
Turkey Bigarreau	Bigarreau
———	——— White
Virginian May	Kentish
White Ox Heart	Bigarreau, White
White Transparent	White Heart

PLUMS.

Agen Date *see*	D'Agen
Amber Primordian	Jaune Hative
Bifere	Double Bearing
Black Morocco	Morocco
Bleeker's Yellow Gage	Bleeker's Gage
Bolmar	Washington
Bolmar's Washington	Ditto
Bradford Gage	Green Gage
Brevoort's Purple	Purple Washington
Brignole	Perdrigon, Blue
——— Violette	Ditto do.
Bury Seedling	Coe's Golden Drop
Catalorian	Jaune Hative
Coe's Imperial	Coe's Golden Drop
Common Damson	Damson
Cooper's Large Red	Cooper's Large
——— American	Ditto do.
Damas Blanc Hatif Gros	Damas Blanc
——— Tres Hatif	Ditto do.
——— Gros	Quetche
Damask	Ditto
Dame Aubert	Magnum Bonum, White
Duane's Purple French	Sharp's Emperor
D'Avoine	Jaune Hative
Denniston's	Superb, Denniston's
Early Morocco	Morocco
Egg Plum	Magnum Bonum, White
Fair's Golden Drop	Coe's Golden
Florence	Magnum Bonum, Red
Franklin	Washington
German Gage	Bleeker's Gage
——— Prune	Quetche
Gisborne's Early Prolific	Gisborne's
Grosse Reine Claude	Green Gage
——— Luisante	Magnum Bonum, White
Grove House Purple, *see*	Fotheringham
Howell's Large	Nectarine, True
Ickworth Imperatrice	Imperatrice Ickworth
Imperatrice	——— Blue
——— Violette	Ditto do.
Imperial Diadem	Diapree Rouge
——— Violette	Magnum Bonum, Red
Jaune de Catalogue	Jaune Hative
Jenken's Imperial	Nectarine, True
Keyser's Plum	Hulling's Superb
Kirke's Seedling	Kirke's
Knight's No. 6	Imperatrice Ickworth
——— Large Drying	Large Green Drying
La Delicieuse	Cooper's Large
La Venitienne	Double Bearing
Lawrence's Favourite	Lawrence's Gage
Long Damson	Damson, Shropshire
Louis Phillipe	Nectarine, True
Maitre Claude	Perdrigon, White
Mimms	Diapree Rouge
Mirabelle, Double	Drap D'Or
——— Grosse	Ditto
Miriam	Royal Hative
Monsieur Ordinaire	Orleans
——— Hatif	——— Early
Moyeu de Bourgoyne	Perdrigon Violet Hative
New Orleans	Orleans, Early
—— Washington	Washington
—— York Purple	Purple Washington
Old Orleans	Orleans
Paterson's	Gisborne's
Peach Plum	Nectarine, True
Perdrigon Violette	Perdrigon, Blue
——— Hatif	——— Violet Hatif
——— Blanc	Perdrigon, White
Pond's Purple	Pond's Seedling
Prune de Ants	D'Agen
—— Prune Damson	Damson, Shropshire
—— D'Alemagne	Quetche

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Synonyms.

Plums.

Purple Egg	*see* Magnum Bonum, Red	Sheen	*see* Fotheringham
—— Magnum Bonum	Ditto do.	Shailer's White Damson	Damson, White
—— Gage	Reine Claude Violette	Small Round Damson	——White
Red Imperial	Magnum Bonum, Red	Steer's Emperor	Goliath
—— Damask	Orleans	Veritable Imperatrice	Imperatrice, Blue
Reine Claude	Green Gage	Violet Gage	Reine Claude Violette
Robe de Sergent	D'Agen	White Primordian	Jaune Hative
Roche Corbon	Diapree Rouge	Wilmot's Early Orleans	Orleans, Early
Round Damson	Damson	—— Late Orleans	Caledonian
Royal Victoria	Victoria, Denyer's	——— New Green Gage	Green Gage
St. Barnabe	Jaune Hative	Yellow Perdrigon	— Drap D'Or
Saint Maurin	D'Agen		
—— Martin Rouge	Coe's Fine Late Red		
—— Cloud	Goliath		

APRICOTS.

Apricots.

Abricot Blanc	*see* Masculine, White	Grose Germine	*see* Roman
—— Common	Roman	Hunt's Moorpark	Moorpark
Amande Aveline	Breda	Large Early	Early Peach
Ananas	Ditto	——Peach	Gros Peche
Anson's	Moor Park	——Red	—— Rouge
—— Imperial	Gros Peche	——Turkey	Turkey
Blenheim	Shipley's	Orange	Royal Orange
Brown Masculine	Masculine, Red	Persique	Breda
D'Alexandrie	Musch-Musch	Royal George	Royal Orange
De Nancy	Moorpark	——Peach	Gros Peche
D'Hollande	Breda	——Persian	Royal Orange
Du Luxemberg	Gros Peche	Shipley's Large	Shipley's
Dunmore	Moorpark	Sudlow's Moorpark	Moorpark
Dunmore's Breda	Ditto	Temple's	Ditto
Early Masculine	Masculine, Red	Transparent	Roman
Early Orange	Royal Orange	White Algiers	Masculine, White
Germine	Roman	Walton Moorpark	Moorpark
Gros Precoce	Early Peach		

NECTARINES.

Nectarines.

Aromatic	*see* Violet Hative	Early Black	*see* Newington, Early
Anderson's Round	Newington	——— Newington	Ditto do.
Black Murrey	Murrey	—— Brugnon	Violette Hative
Brugnon	Italian	Emmerton's New White	White, New
Claremont	Elruge	Empress	Imperatrice
Cowdray, White	White, New	Fine Gold Fleshed	Golden
D'Angleterre	Newington	Flanders	White, New
Duc de Telle	Duc de Telliers		
Du Tilliers	Duc de Telliers		

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Synonyms.

Nectarines.

Grosse Violette Hative ..... *see*	Violette Grosse
Hampton Court	Violette Hative
Hunt's Early Tawny	Hunt's Tawny
——— Large Tawny	Ditto do.
Large White	White, New
Lucombe's Black ..	Newington, Early
Neal's White	White, New
New Dark Newington	Newington, Early
Old Newington	Newington
Orange ..... *see*	Golden
Scarlet Newington ..	Newington
Sion Hill	Ditto
Smith's Newington..	Ditto
Spring Grove	Elruge
Violette de Courson	Violette Grosse
——— Musquee ..	———Hative
White	White, Old
William's Orange	Pitmaston Orange
— ——— Seedling	Ditto do.

PEACHES.

Peaches.

Admirable .....*see*	Admirable, Early
Anne.....	Early Anne
Avant Peche de Troyes ..	Nutmeg, Red
——— Rouge	Ditto do.
Belle Bausse	Mignonne Grosse
—— de Paris.....	Malta
Boudin	Admirable, Late
Bourdine	Ditto do.
Brentford Mignonne	Bellegarde
Brevoort's Morris ..	Morrisania
——— Seedling	Ditto
Brown Nutmeg	Nutmeg, Red
Buckingham Mignonne	Barrington
Chinese Peach	Flat Peach of China
Colonel Ansley's....	Barrington
Double Mountain ..	Double Montaigne
Dragon	Admirable Scarlet
Early Newington ..	Newington, Smith's
———Red Nutmeg	Nutmeg, Red
———Royal George	Royal George
Edgar's Late Melting	Chancellor
French Magdalene..	Madeline De Courson
——— Mignonne ..	Mignonne Grosse
——— Royal George	Bellegarde
Galande Violette....	Bellegarde
Green Nutmeg	Early Anne
Grimwood's Royal Charlotte..	Royal Charlotte
———— Royal George	Mignonne Grosse
Hoffman's Pound....	Morrisania
Italian	Malta
Java Peach	Flat Peach of China
Kew Early Purple ..	Royal Charlotte
L'Admirable	Admirable, Early
La Royale	——— Late
Large Newington *see*	Newington, Old
Late Chancellor.. ..	Chancellor
Lockyer's Mignonne	Royal George
Lord Falconberg's Mignonne.....	Royal Charlotte
Lord Montague's Noblesse	Noblesse
Lord Nelson's	Royal Charlotte
Madaleine Rouge ..	Madeline De Courson
————Rouge à Petite Fleurs	Royal George
Malta de Normandie	Malta
Mellish's Favourite..	Noblesse
Millet's Mignonne ..	Royal George
Morrison's Pound ..	Morrisania
Mountauban.....	Double Montaigne
Narbonne	Admirable, Late
Newington	Newington, Old
New Royal Charlotte	Royal Charlotte
Noisette	Chancellor
Peche de Malte	Malta
———Royale	Admirable, Late
Peen To	Flat Peach of China
Rouge Payaanne....	Madeline De Courson
Royal Kensington ..	Mignonne Grosse
———Sovereign ..	Ditto do.
Smith's Early Newington	Newington, Smith's
Stewart's Late Galande	Chancellor
Superb	Royal George
——— Royal	Mignonne Grosse
Swalch, or Swalze ..	Double Swalsh
True Red Magdalene	Madeline De Courson
Vanguard	Noblesse
Violette Hative	Bellegarde
Warburton Admirable	Admirable, Late Warburton

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Synonyms.

FIGS.

Figs.

Ashbridge Forcing ..	*see* Brown Turkey	Early Forcing .. *see*	Ischia, Black
Bayswater	Brunswick	Figue Blanche.....	Marseilles
Black Naples	Ditto	Green Ischia	Ischia White
Blue Burgundy	Brown Turkey	Hanover	Brunswick
—— Ischia	Ischia, Black	Large Blue	Brown Turkey
Brown Hamburg....	Brunswick	Lee's Perpetual	Ditto do.
——— Italian	Brown Turkey	Madonna	Brunswick
——— Naples	Ditto do.	Melitte	Angelique
Chesnut	Ischia, Brown	Small Brown	Malta
—— Coloured Ischia	Ischia, Brown	White Marseilles....	Marseilles
Concourelle Blanche	Angelique	———Naples	Ditto
Cyprus	Ischia, Yellow	———Standard	Ditto

STRAWBERRIES.

Strawberries.

American Scarlet, *see*	Knight's Large Scarlet	Keen's New Pine, *see*	Keen's Seedling
Atkinson's Scarlet ..	Grove End Scarlet	Knight's No. 7	Downton
Black	Old Black	———Scarlet	Knight's Large Scarlet
———American	American Scarlet	———Seedling ..	Downton
———Beacon	Old Black	———Strawberry	Ditto
———Canterbury ..	Ditto	Large Scarlet	Knight's Large Scarlet
———Pine	Ditto	Mulberry	Old Black
Bostock Pine	Bostock	Murphy's Child	Keen's Seedling
——— Seedling....	Ditto	NewAmericanScarlet	American Scarlet
Bryam	Ditto	New Roseberry	Ditto do.
Caledonian New Scarlet	Dtto	Patagonian	Chili
Des Alpes á Fruit Blanc	White Alpine	Red Monthly	Red Alpine
Des Alpes á Fruit Ronge	Red Alpine	Roseberry	Gooseberry
Elton Seedling	Elton Pine	Scotch Scarlet.....	Aberdeen Gooseberry
Greenwell's French	Chili	Sir George Mackenzie's Late Scarlet	Coul Late Scarlet
———— New Giant	Ditto	Thomson's Roseberry	American Scarlet
Hairy Leaved Scarlet	Knight's Large Scarlet	Turkey Pine	Old Black
Keen's Black Pine..	Keen's Seedling	Wellington	Bostock
		White Monthly	White Alpine
		Wilmot's Black Imperial	Black Prince

GRAPES.

Grapes.

Admiral Troller, *see*	Black Hamburg	Black Portugal, *see*	Alicant
Ansley's Large Oval Black	Black Morocco	—— Spanish	Ditto.
Black Escalon	Black Corinth	Blue or Violet, Frontignac	Black Frontignan

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Synonyms.

Grapes.

Cambridge Botanic Garden .... *see*	Black Prince
Canon Hall Muscat	Muscat of Alexandria
Chasselas Dore	Royal Muscadine
D'Arboyce Chasselas Blanc	Ditto do.
Dutch Sweet-Water	White Sweet-Water
Flame Coloured Tokay	Lombardy
Frankendale	Black Hamburg
Frontignac of Alexandria	Muscat of Alexandria
Gibraltar	Black Hamburg
Hampton Court	Ditto do.
Jerusalem Muscat ..	Muscat of Alexandria
Malaga	Ditto do.
Muscat Blanc	White Frontignan
——— Gris	Grizzly Frontignan
——— Noir	Black Frontignan
Parsley-leaved Coitat	Malmsey Muscadine
Passe-Congue Musque	Muscat of Alexandria
Poonah ..... *see*	Black Lombardy
Purple, Red, Brown, and Dutch Hamburg	———Hamburg
Raisin de Corinth	———Corinth
——— D'Espagne ..	———Morocco
——— des Carmes ..	———Lombardy
Red Frontignac of Jerusalem	Red Muscat of Alexandria
Red Rhenish	Lombardy
Rhodes	Black Morocco
Stillward's	White Sweet-Water
Teinturier	Alicant
Tottenham Park Muscat	Muscat of Alexandria
Troller	Black Hamburg
Valentine's	Ditto do.
Victoria	Ditto do.
Violet Frontignac ..	Black Frontignan
Warner's Black	———Hamburg
West St. Peter's....	———Lombardy
Works of Manor Grape	———Damascus
Zante Currant.....	———Corinth

PINE APPLES.

Pine Apples.

Anson's Queen .. *see*	Anson's
Barbadoes	Black Sugar-Loaf
Black Barbadoes....	Jamaica Black
Bogwarp	Montserrat
Brown Antigua	Antigua Black
———Havannah ..	Havannah
Cape Coast	Montserrat
Cochineal.....	Ditto
Cockscomb	Enville
Copper-coloured	Black Sugar-Loaf
English Globe	Globe
Ditto do.	Lemon Queen
Enville Sugar-Loaf	Enville
Green Havannah, *see*	Antigua Green
Jamaica	Jamaica Black
Lemon Antigua	Anson's
Pitch Lake Pine....	Trinidad
Red Ripley	Montserrat
Royal Providence ..	Green Providence
Smooth Antigua	Havannah
St. Kitt's.....	Jamaica New
St. Vincent	Ditto do.
WollartonProvidence	Green Providence
Wortley's West Indian	Antigua Black

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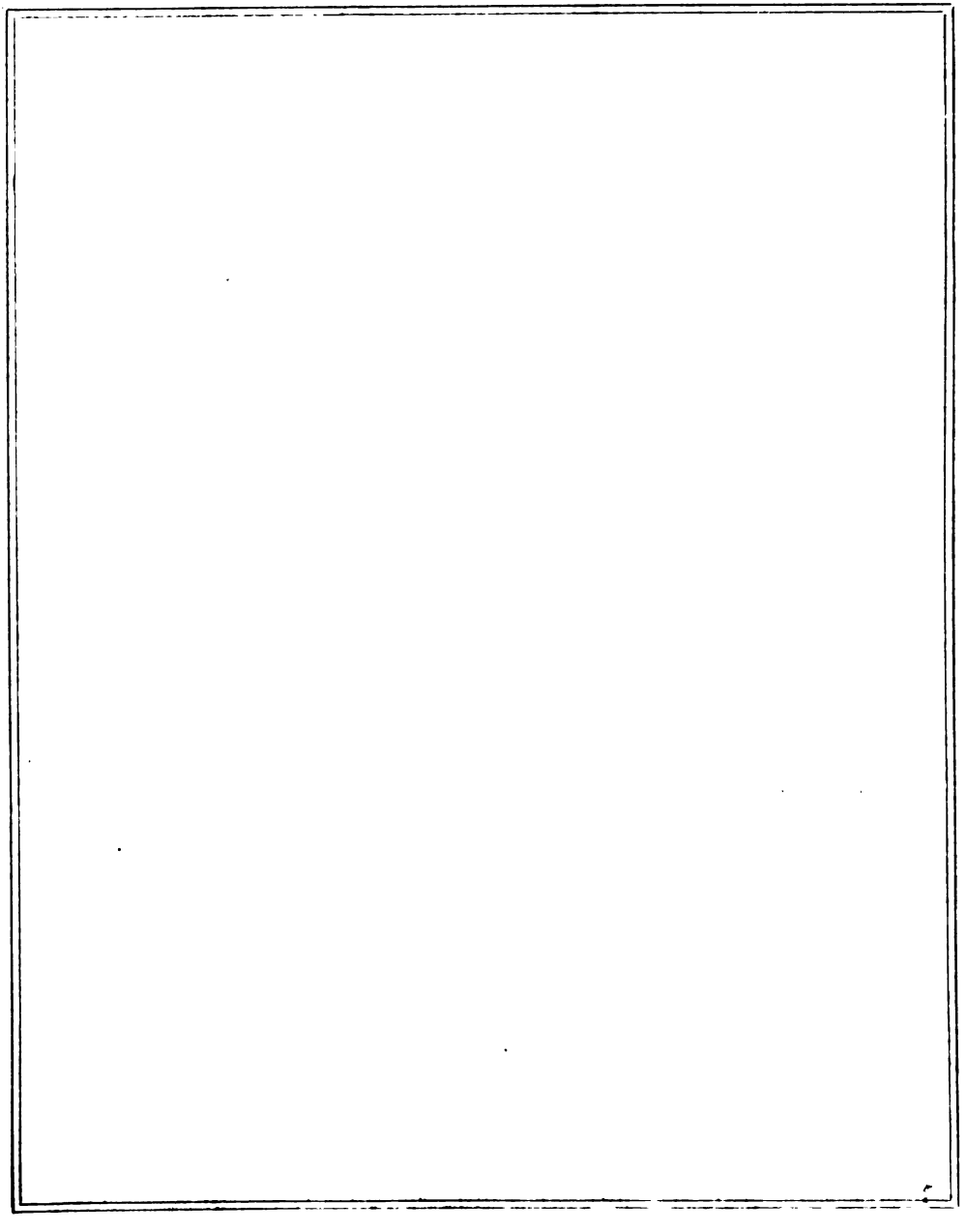

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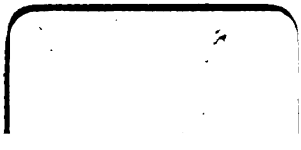

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